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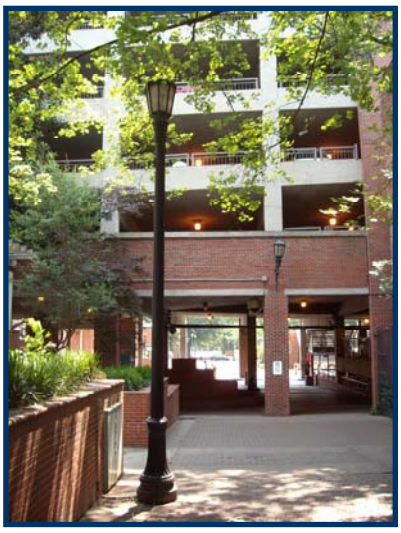

City of Raleigh

Right-Sizing Citywide Off-Street Parking Standards

2008

Transportation Planning for Livable Communities
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Introduction and Project Summary

I. Introduction

For over fifty years, zoning codes across the United States have included minimum requirements for off-street, on-site, and tenant-reserved parking spaces for new development projects as a means for mitigating the impact of development-generated parking demand on nearby streets. Most current requirements still date to the mid-twentieth century – a time when the advent of affordable, personal automobiles had captured the public imagination and shaped visions of the future of urban development. The seemingly insatiable demand for this ever-more accessible mobility option brought concerns over parking and traffic impacts on local streets, as new destinations were projected to dramatically increase curb and roadway competition, resulting in congested local streets and frustrated local residents and commercial customers.

The chosen zoning solution was to require sufficient accessory parking at each development to ensure that spaces would almost always be available for anyone that chose to arrive by car. This high level of availability almost invariably resulted in such spaces being provided for free or at nominal costs. This is a simple and somewhat effective means for reducing demand for street spaces, and therefore reducing local search traffic among vehicles looking for an available spot. But at the same time it creates a powerful incentive to make most or all trips in a car by reducing the time and monetary costs of this choice, especially compared to pay-as-you go options such as transit. This results in shifting local congestion to regional roadways that suddenly become packed with cars on their way to destinations that have assured them of a free, available parking spot no matter where they are headed.

When minimum parking requirements first achieved mass acceptance, it was logical to expect the impact of such incentives, in most places, to be minimal – after all they were only incentivizing a modal choice that was expected to be the natural inclination of just about everyone anyway, especially within the car-centric cities envisioned for the future. Today however, after decades of declining transit ridership and increasing congestion woes, cities are beginning to re-examine the impact of this established zoning practice.

Minimum parking standards and their effect on travel choice, housing costs, community development, and urban design have come under increased scrutiny — especially as traditional urban forms and transportation virtues such as walkability and transit access have regained favor among residents, businesses, tourists, shoppers, diners, and seekers of recreation. At the same time, innovative on-street management strategies have emerged that offer the potential to mitigate parking spillover and search traffic much more effectively than minimum parking requirements — and without the undesirable residual effects on local communities and regional congestion.

It is within this context that City of Raleigh representatives commissioned Nelson\Nygaard Consulting Associates to review its citywide, off-street parking standards. The following report summarizes their collaborative effort to “Right-Size” these standards to effectively address 21st Century transportation realities, and support today’s visions for Raleigh as a livable, sustainable, and multi-modal modern city.

II. Project Summary

The project was organized into a series of six tasks, as presented below followed by a brief description of, and findings from, Tasks 2 – 6:

- Task 1 – Project Kickoff and Scope Finalization
- Task 2 – Existing Ordinance Review
- Task 3 – Existing Conditions Review
- Task 4 – Best Practices Review
- Task 5 – Stakeholder Roundtables
- Task 6 – Recommendations

A. Existing Ordinance Review

To begin, the Project Team conducted a review of the current zoning standards and related ordinances and guidelines in effect for the City of Raleigh, including:

- The Zoning Ordinance
- The Zoning Handbook
- The Street, Sidewalk and Driveway Access Handbook
- The State of North Carolina Impervious Surface Legislation
- Downtown Urban Design Guidelines
- The City Stormwater Utility Fee Info Sheet
- Summaries of Pedestrian-Business Overlay Districts Parking Standards

This task revealed many leading practices already in place in the Raleigh ordinances, though typically limited in applicability, including:

- Introduction of Parking Maximums
  - Limited to residential development within Downtown Overlay District and PBODs.
- TOD-specific Zoning Regulations
  - Precede the transit service. Indicate recognition of benefits of new transit service in reducing parking demand.
- Introduction of Bike Parking Requirements
  - Limited to proposed TOD Overlay Districts.
- Emphasis on Landscaping/ Surfacing Impacts
  - Particularly storm water management issues.
- Pedestrian Access Requirements
  - Awareness of parking's potential impact on pedestrian environments.
- Contextual Allowances for Reduced Minimum Requirements
  - Options to seek requirement reductions based on site- or development-specific circumstances.

1. Existing Conditions Review

This was followed by a review of the existing transportation context within which zoning revisions would be taking place. Task 3 thus consisted of a review of current transportation-related behaviors and trends, focusing on:

- Parking development in response to current standards;
- Transportation and modal choice patterns among Raleigh residents and employees; and
- Transit.

Findings from this task include:

a. Development Trends

- Some "over-parked" developments may have been avoided with more requirement-reduction options.
- Potential opportunity to offer requirement flexibility in return for investments: alternative transportation, landscaping, stormwater management, ...
- Assess whether low existing requirements (Medical Uses) have resulted in "under-parked" developments.

b. Transportation Patterns

- Opportunities exist to support distinct car ownership and commute-mode patterns that forward City objectives for increased population densities; reduced housing costs; and lower rates of single-occupant vehicle commuting.

c. Transit

- Transit is likely to continue to grow as a popular option for residents, commuters, and visitors.
- Promising coordination among the region's many services, including the informational and promotional portal provided by GoTriangle.
- Proposed service and amenities improvements present an important opportunity to attract new riders, including visitors.
- Data indicate a steady accumulation of new riders in recent years, a trend that may be accelerating further with recent spikes in gas costs.

The Project Team then completed a series of tasks to asses and analyze zoning change options for updating the District's zoning ordinance requirements for parking.

2. Best Practices Review

A best practices review consisted of two sub-tasks:

a. Leading Practices and Cities

A review of leading practices and cities, highlighting innovative parking requirement strategies from across the nation and beyond.

b. Peer Cities Review

A review of current practices among three peer cities — Asheville, and Charlotte, NorthCarolina and Gainesville, Florida — identified for their similarity to Raleigh in terms of size, geographic location, position as state capitals, and/ or proximity to major universities.

Findings from this task include:

- To reduce many of the unintended consequences of decades of reliance upon zoning standards for minimum parking requirements, cities across the country and beyond are beginning to:
  - Reduce (or Tailor) Minimum Requirements – typically based on contextual- or project-specific characteristics
  - Eliminate Minimum Requirements – typically in downtown or overlay districts, or for specific use categories
  - Implement Maximum Standards – limiting accessory parking in areas where mitigating impacts from driving are a priority
  - Offer fees-in-lieu-of options for constructing less than the minimum required number of spaces
  - Encourage or require shared parking
  - Require bicycle, carpool and vanpool, and car-share parking
  - Require that parking be separated, or "unbundled", from the cost of renting or purchasing housing units or commercial space
  - Crediting tandem-arranged spaces and on-street spaces.
- Peer cities have adopted many of these and similarly-intended best practices, including:
  - Requiring bicycle parking – All three;
  - Broadly implemented maximum parking limits – Asheville and Gainesville
  - Flexibility – All
    - Crediting Shared Parking efficiencies and newly created on-street spaces;
    - Swaps - Allowing bicycle, motorcycle, carpool and vanpool spaces in lieu of standard auto spaces
    - Increased landscaping or impervious surface requirements for building above maximum parking limit

3. Stakeholder Roundtables

A set of stakeholder Focus Groups in which the Project Team engaged developers and residents in discussions of the potential impacts of various zoning revision options.

- Developers expressed a strong interest in flexible standards that would credit shared-parking efficiencies — whether for new, mixed-use projects or for single-use project adjacent to over-parked existing uses. Many developers also expressed frustration that newly created on-street spaces can't be counted to meet minimum parking requirements. This was frustrating particularly for developers of the "New Urbanist" development style that relies heavily on commercial corridors oriented to sidewalks and street parking rather than dedicated parking lots.
- Residents presented a mix of concerns, with many supporting new zoning standards to reduce reliance upon autos and support walking, cycling, and transit and other

expressing strong reservations regarding zoning changes that will exacerbate spillover conditions in urban, residential neighborhoods.

4. Recommendations

A review of all completed tasks and an assessment of zoning change options, this task culminated in the identification and description of a comprehensive set of recommended zoning changes to right-size the City of Raleigh's off-street parking requirements.

In addition to a revised schedule of parking requirements, key, final recommendations include:

- Adding Flexibility to Requirements – Following peer city and leading practice examples to expand developer options to right-size efficient project parking:
  - Shared, on-street, and tandem space credits
  - Modal space swaps
  - Fee and Transportation Investments in lieu of meeting minimum requirements
- Add Standard requirements for bicycle and motorcycle/scooter parking

Summaries of each Task were presented as technical memoranda following each task, and are presented below as distinct sections of this final report.

Chapter 1. Existing Ordinance Review

I. Introduction

Following is a review of the parking and related regulations and guidelines contained in the City of Raleigh's zoning ordinance and other related regulatory ordinances and guidelines. Zoning Ordinance

A. Schedule of Minimum Off-Street Requirements

Figure 1 below provides a summary of the standard minimum parking requirements for the most common land uses, as defined in the City of Raleigh zoning ordinance for general zoning districts.

Figure 1 – Summary of the 10-2081: Schedule of Off-Street Parking Standards

Major Use Types	Minimum Parking Requirement (Spaces)
Detached & Duplex Homes	1 per dwelling unit
Multi-Family (1-Bdrm)	1.5 per dwelling unit
Multi-Family (2-Bdrm)	2 per dwelling unit
Multi-Family (3-Bdrm)	2.5 per dwelling unit
Multi-Family (4+ Bdrm)	3, plus 0.5 for each bedroom above 4, per dwelling unit
House of Worship & Related	1 for each 8 seats in PAR*
Daycare	1 for each 8 enrollees, plus 1 for each employee
Elementary School	1 for each 5 seats in PAR*
High School	1 for each 600 SF of academic space
Higher Education - with either more than 10,000 students, or less than 50% of all students housed on campus	1 for each 600 SF of academic space, plus 1 for every five seats in PAR, plus one for every two beds in an on-campus residential facility
Higher Education - with less than 10,000 students and more than 50% of all students housed on campus	1 for each 900 SF of academic space, plus one for every two beds in an on-campus residential facility
Office	1 for each 300 GSF
General Commercial	1 for each 200 GSF
Bar, Nightclub, Tavern, Lounge	1 for each 50 GSF dedicated for public use, or 1 for each 4 seats whichever is greater
Restaurant	1 for each 50 GSF or 1 for each 4 seats whichever is greater, but no less than 12 spaces
Hotel	1 for each rooming/ lodging unit
Shopping Center	1 space for each 200 to 250 GSF
Theater	1 space for each 5 seats or 1 space for each 5 persons of maximum occupancy capacity, whichever is greater
Industrial/ Manufacturing/ Warehouse	1 for every two employees during shift of maximum employment and 1 for every truck to be stored or stopped simultaneously
Open Air Markets	1 for every 200 GSF of any buildings plus 1 for every 200 SF of open display area

Major Use Types	Minimum Parking Requirement (Spaces)
Bicycle Parking Requirements	None

* Principle Assembly Room

B. Other Standards and Options

1. Exceptions and Modifications

a. Compact Spaces

Up to 30 percent of the parking spaces as required in the Schedule of Off-Street Parking Schedules for the following uses may be compact spaces provided the required parking is located in parking decks or parking garages containing 150 spaces or more:

- All office, studio or agency uses in the Schedule of Off-Street Parking Schedules.
- Industries, wholesale establishments, warehouses, and other businesses not catering to retail or customer trade.

b. Off-Site Parking

Required off-street parking may be provided off-site in any non-residential zoning district other than Conservation Buffer, Agricultural Productive, or Residential Business:

- Within 400 feet of any entrance of the principal use for customer, patron, or resident parking, and
- Within 1,000 feet of any entrance of the principal use for employee parking.

c. Parking Reductions

The Board of Adjustment can grant reductions for pedestrian trade.

Off-street parking requirements for high schools, vocational schools, and institutions of higher education may be changed upon a finding by the City Council that such change will not negatively impact provision of parking sufficient to meet demand.

d. Schools

The number and distance standards for off-street parking required for high schools, vocational schools, and institutions of higher education may be changed upon a finding by the City Council that such change will not negatively impact provision of parking sufficient to meet demand based on the following:

- Ratio of on-campus to off-campus population.
- Evidence of current parking utilization.
- Location of current parking resources in relationship to the uses served.
- Use characteristics of major assembly areas.
- Degree of on-campus commercial and research activity.
- Provision of alternative transportation services, including, but not limited to shuttle services, full bus service, bikeways, and tramways.
- Institutional policies relating to parking.

- Use characteristics of support facilities for students and administrators.

e. Shared Parking

The required parking spaces for separate uses may be combined in one lot, but the required space assigned to one use may not be assigned to another use during the same hours of operation.

Where more than one use is included within any one building or on any lot, the parking requirements must be the sum total of the requirements of the various uses set forth in the 10-2081: Schedule of Off-Street Parking Standards, except as permitted under shopping centers and temporary events.

f. Landscaping

The number of off-street parking spaces required may be reduced by the following ratio: The square footage of required landscaped planting area divided by 150 but no fraction thereof, subject to approval of the City Council which first determines if further reductions will cause on-street parking congestion.

g. Space for Recycling of Corrugated Cardboard

The number of off-street parking spaces required by the 10-2081: Schedule of Off-Street Parking Standards may be reduced by the following ratio: the square footage of space required for container(s) devoted exclusively to the collection of corrugated cardboard for recycling, plus the space required for screening of any such container(s) divided by 150, but no fraction thereof, provided that no reduction in the number of spaces required by the 10-2081: Schedule of Off-Street Parking Standards of more than ten percent are allowed without the prior approval of the City Council, which must first determine if further reductions will cause on-street parking congestion.

2. Design Standards

All off-street parking that is required by the 10-2081: Schedule of Off-Street Parking Standards, including commercial parking lots must be surfaced, marked, sized, arranged, and oriented in accordance with the following:

Parking surfaces must be constructed of permanent, non-erodible surface treatment limited to masonry, concrete or asphalt, except:

- Parking facilities for outdoor athletic facilities or outdoor theaters with 3,000 or more permanent seats or design capacity may use grass as the non-erodible surface;
- Alternative surfaces which allow greater water infiltration in floodplain areas, reservoir watershed protection areas, or within protected ground areas may be approved by the Inspections Department.
- Approved, temporary events.
- Parking for single-family detached and duplex dwellings not including manufactured homes in manufactured home parks.
- In historic overlay districts and for historic landmarks.
- Parking facilities for cemetery uses may use gravel or grass as the non-erodible surface.

a. Pedestrian Access: Zoning: Sec. 10-2091

Site plans for the following uses must show pedestrian access to a public street from the principal building(s) or use (including parking) which are located within 400 feet of a public street and which allow for public access:

- Art gallery, museum, library, hospital, day care facility
- Church, synagogue
- Civic/convention center , stadium, theater, amphitheater, race track of over 250 seats
- Commercial use - all uses listed on Schedule of Permitted Land Uses in Zoning Districts
- Congregate care structure or congregate living structure
- Group housing development
- Life care community
- Manufacturing use - all uses listed on Schedule of Permitted Land Uses in Zoning Districts
- Manufactured home park
- Multifamily dwelling development of over six dwellings
- Office use - all uses listed on Schedule of Permitted Land Uses in Zoning Districts
- Recreational indoor or outdoor use - commercial
- Rest home
- Rooming house, boarding house, lodging house or tourist home, guest house
- Schools - all schools listed on Schedule of Permitted Land Uses in Zoning Districts
- Transportation use - all uses listed on Schedule of Permitted Land Uses in Zoning Districts
- Transitional housing - all uses listed on Schedule of Permitted Land Uses in Zoning Districts

3. Special Zoning/ Zoning Overlay Districts

a. Office and Institution-2 District

In the Office and Institution-2 District the Council or the Planning Commission may change the requirements in the preliminary site plan approval.

b. Pedestrian Business Overlay District

Off-street parking requirements for development within a Pedestrian Business Overlay District (PBOD) are based upon recommendations and requirements set forth in the adopted Streetscape and Parking Plan for the subject area of the Overlay District. The Streetscape and Parking Plan must not adopt parking strategies which are less restrictive than that specified in the following section.

i. General Standards

Except for approved site plans or for projects in the Transit Orientated Development Overlay District (see section below), the minimum number of off-street parking spaces required for new structures, additions or expansions to existing structures or changes in use is one space per 400 square feet of building floor area or the minimum number of parking spaces set forth in the

10-2081: Schedule of Off-Street Parking Standards, whichever is less, with the exception of the following land uses:

- Projects with 16 or fewer dwelling units per building are not required to provide any off-street parking spaces for the dwelling units. Projects with 17 or more dwelling units per building are not required to provide off-street spaces for the first 16 dwelling units, but are required to provide at least one off-street parking space per unit in excess of 16 units.[1]
- For residential developments or the residential portion of a mixed-use development, no more than two parking spaces per dwelling unit can be located on the site.
- No parking is required for retail facilities located within existing uses, new structures, additions or expansions to existing structures or changes in use for existing uses totaling 10,000 square feet or less. For retail facilities located within existing uses, new structures, additions or expansions amounting to more than 10,000 square feet, the first 10,000 square feet of building area are exempt from calculations of minimum parking requirements.
- Parking requirements for eating establishments, bars, nightclubs, taverns and lounges located within one hundred feet of a residential zoning district with hours of operation extending past 11:00pm must be that specified by the adopted Streetscape and Parking Plan for commercial uses.
- Where a Streetscape Plan had previously been adopted, but no Streetscape and Parking Plan has been subsequently adopted, the minimum number of off-street parking spaces is one space for every 100 square feet floor area gross of building for public use or one space for every eight seats, whichever is greater.
- Proposed expansions or modifications to existing developments with on-site parking must be required to retain a minimum of one on-site parking space devoted to persons with disabilities.

ii. Standards within Approved Streetscape and Parking Plans

Figure 2 below provides a summary of requirements specific to existing PBODs.

Figure 2 – Existing PBOD Requirements

Uses	University Village & Oakwood-Mordecai	Glenwood South	Peace Street	Cameron Village	Glen Lake Office Park	Promenade at Crabtree
	Space Requirements/ Limits					
Recreation	1 per 400 GSF above 10,000**	45% reduction* for first 2,500 GSF, 15% reduction thereafter	45% reduction* for first 2,500 GSF, 30% reduction thereafter	45 % Reduction	No Reduction	20% Reduction

[1] With the exception that, units occupied by no more than two (2) residents not related by blood, marriage or adoption sixty-two (62) years and older must provide a minimum of one-half (1/2) space per unit.

<table>
<tr><th>Uses</th><th>University Village & Oakwood-Mordecai</th><th>Glenwood South</th><th>Peace Street</th><th>Cameron Village</th><th>Glen Lake Office Park</th><th>Promenade at Crabtree</th></tr>
<tr><td></td><td colspan="6">Space Requirements/ Limits</td></tr>
<tr><td>Residential</td><td colspan="6">Minimum: 1 per unit above 16</td></tr>
<tr><td></td><td colspan="6">Maximum: 2 per unit</td></tr>
<tr><td>Institutional</td><td colspan="6">1 per 400 GSF**</td></tr>
<tr><td>Office</td><td colspan="6">1 per 400 GSF</td></tr>
<tr><td>Retail Banking</td><td>1 per 400 GSF above 10,000</td><td rowspan="6">45% reduction* for first 2,500 GSF, 15% reduction thereafter</td><td rowspan="6">45% reduction* for first 2,500 GSF, 30% reduction thereafter</td><td rowspan="6">45 % Reduction</td><td rowspan="6">No Reduction</td><td rowspan="6">20% Reduction</td></tr>
<tr><td>Hotel</td><td>1 per guest room or 1 per 400 GSF, whichever is less</td></tr>
<tr><td>Theater</td><td>1 per 5 seats or 1 per 400 GSF, whichever is less</td></tr>
<tr><td>Restaurants & Bars</td><td>1 per 100 SF of public floor area or 1 per 8 seats, whichever is less</td></tr>
<tr><td>Retail</td><td>1 per 400 GSF above 10,000**</td></tr>
<tr><td>All Other Uses</td><td colspan="6">1 per 400 GSF**</td></tr>
</table>

* From 10-2081 Schedule of Requirements

** Or requirement from 10-2081 Schedule of Requirements, whichever is less

iii. Off-Site Parking Allowance

Within PBODs, required off-street parking may be provided off-site in any non-residential zoning district other than Conservation Buffer, Agricultural Productive, or Residential Business:

- Within 800 feet for customer, patron, or resident parking; and
- Within 1,200 feet for employee parking.

Within parking areas so designated by an adopted Streetscape and Parking Plan, the allowable off-site distance for all parking is 1,200 feet.

c. Downtown Overlay District

i. General Standards

The minimum number of off-street parking spaces required for new structures, additions or expansions to existing structures or changes in use within the Downtown Overlay District are as described in Figure 3 below:

Figure 3 - Parking Requirements within the Downtown Overlay District

Major Use Types	Minimum Requirements
Detached Homes	1 per dwelling unit
Multi-Family	1 per dwelling unit
House of Worship & Related	1 parking space per 400 GSF or the minimum number of spaces in the 10-2081: Schedule of Off-Street Parking Standards, whichever is less
Daycare	
Elementary School	
High School	
Office	
General Commercial	
Bar, Nightclub, Tavern, Lounge	
Restaurant	
Hotel	1 for each rooming/ lodging unit
Shopping Center	1 parking space per 400 GSF or the minimum number of spaces in the general requirements, whichever is less
Theater	None
Bicycle Parking Requirements	None

ii. Exemptions, Modifications, and Maximum Limits on Off-Street Parking

- For residential developments or the residential portion of a mixed-use development, no off-street spaces are required for the first 16 dwelling units.
- For residential developments or the residential portion of a mixed-use development, no more than two (2) parking spaces per dwelling unit can be located on the site.
- Most projects with "retail facilities" are not required to provide off-street parking for the first 30,000 square feet of "retail facilities"
- No parking is required for indoor movie theaters.
- No parking is required for the first 10,000 square feet of non-residential development, re-development, or expansion. This, however, cannot be combined with the above exemption for retail facilities to exclude a total of more than 30,000.
- Whenever a site plan is approved the minimum and maximum number of off-street parking spaces must be as approved.

iii. Off-Site Parking Allowance

Required off-street parking may be provided off-site in any non-residential zoning district other than Conservation Buffer, Agricultural Productive, or Residential Business:

- Within 800 feet for customer, patron, or resident parking, and
- Within 1,200 feet for employee parking.

d. Planned Development Conditional Use Overlay District

The off-street parking requirements may be reduced for projects within the Planned Development Conditional Use Overlay District, if it is determined that:

- Pedestrian access and/ or access to permanent transit, carpool or other ridesharing programs are shown to reduce the need for off-street parking; and
- Reduction in the number of required parking spaces is based on a study, provided by the applicant, that calculates the reduction resulting from alternative access provisions; and
- Provision is made for future monitoring and covenanting the limitations based on a given use or mixture of uses.

e. Transit Orientated Development Overlay District

i. Parking Requirements

The minimum and maximum number of off-street parking spaces is determined by the ratios and coordinating strategies established in the applicable adopted transit station area plan (To date, no Transit Small Area Plans or TODODs have been adopted).

ii. Parking Location and Design

Parking that cannot be provided on the same lot as the principal building or principal use may be provided within the overlay district on any lot within 800 feet of any entrance of the principal use for customer, patron, or resident parking and within 1,200 feet of any entrance of the principal use for employee parking. However, such property in the underlying district must be zoned an Office and Institution district, Shopping Center district, Neighborhood Business district, Business district, Thoroughfare District, Industrial-1 district, Industrial-2 district or Buffer Commercial district. Furthermore, in the Buffer Commercial district the parking must be located inside a parking deck.

Vehicular surface areas must not occupy more than the equivalent of one-third of the linear frontage of the adjacent building or no more than sixty-four linear feet of frontage, whichever is less, with the exception of a retail sales – highway use containing the outdoor sale of petroleum products approved as a special use permit. Within this overlay district, improvements to vehicular surface areas are not allowed except when in conformance with the applicable adopted transit station area plan.

Within the station area core, no new vehicular surface areas, including additions to vehicular surface areas existing prior to the application of a Transit Oriented Development Overlay District, may be located in any portion of the site parallel to and adjoining a street unless such vehicular surface areas are located behind the principal building line extended to the wings of the building, as viewed perpendicular to the recorded street right-of-way, and that such vehicular surface areas are screened from view from any public street by a minimum six-foot high solid wall or closed fence (not including openings necessary for reasonable access to the lot) and that such solid wall or closed fence is the same compatible appearance as the principal building in terms of materials, color, texture and design and includes planting materials so that no more than two-thirds of the surface area of the wall or fence is visible from the street within three years of erection of the structure. 40 percent of this plant material may be deciduous.

Within the station area transition, all new vehicular surface areas, including additions to vehicular surface areas existing prior to the application of a Transit Oriented Development Overlay district, that are located within 50 feet of the street right of way must be screened from view from the public street by a minimum three and one-half foot high solid wall or closed fence

(not including openings necessary for reasonable access to the lot) and that such solid wall or closed fence is the same or compatible appearance as the principal building in terms of materials, color, texture and design and includes planting materials so that no more than two-thirds of the surface area of the wall or fence is visible from the street within three years of erection of the structure. 40 percent of this plant material may be deciduous.

Existing vehicular surface areas lawfully existing prior to the application of a Transit Oriented Development Overlay District may be utilized by existing uses and buildings in this overlay district. These vehicular parking areas must be made to conform to the applicable adopted transit station area plan and general design standards whenever those buildings and uses that utilize these vehicular parking spaces undergo one or more of the following:

- Expansions or additions that singularly or collectively exceed either 25 percent of the total floor area gross of the building or 25 percent of the total gross area occupied by the use where there is no principal building. The percent of expansion is to be determined with reference to the size and area of the building or use which existed at the time this overlay district first became applicable to the property.
- Renovation or repair work which, during any one calendar year exceeds 25 percent of the local listed county tax value.
- Change in use that results in a change in the type of Building Code occupancy as set forth in the North Carolina Building Code.

Parking structures located within 50 feet of the street right-of-way within a Transit Oriented Development Overlay District must include ground-level uses other than the parking structure along at least two-thirds of the street facade. When the parking structure is located at the intersection of two or more streets, street facades must include uses other than the parking structure at the ground-level for two-thirds of the total street facade. The facade of the parking structure visible from the street must complement the principal building, if any, by using compatible building materials and architectural designs, as reflected in scale, color, texture, fenestration, width, height, roof lines, and other similar architectural gauges.

iii. Landscaping Requirements

Landscaping must be installed in accordance with the applicable adopted transit station area plan, provided that:

- Street protective yard requirements are inapplicable when a pedestrian way is installed in accordance with the applicable adopted transit station area plan and zoning regulations.
- Except within the station area edge, the transitional protective yard requirements are inapplicable when in conflict with the Streets, Sidewalks, and Driveway Access Handbook Section.

iv. Pedestrian Ways

The design of new pedestrian facilities will be determined by the applicable adopted transit station area plan, but not less than the widths specified in the Streets, Sidewalks, and Driveway Access Handbook. For all existing buildings and uses, the widths of existing pedestrian ways located from the curb to the building line must not be reduced unless, after the reduction, the width of the remaining pedestrian way equals or exceeds the required minimum widths of pedestrian ways for new uses and buildings as shown in the applicable adopted transit station

area plan, but not less than the widths specified in the Streets, Sidewalks, and Driveway Access Handbook. The required minimum pedestrian ways can be located on street rights-of-way, sidewalk, and pedestrian easements provided the pedestrian way is located between the building line and the curb. All improvements to pedestrian ways must be made in accordance with the applicable adopted transit station area plan.

v. Bicycle Parking

Bicycle parking spaces must be provided for all new uses, and new buildings, and for existing buildings and uses whenever those existing buildings and uses undergo any one or more specified expansions, expenditures, or changes. Bicycle spaces must be provided within easy access from the street right-of-way at a rate and design that is in accordance with the applicable adopted transit station area plan.

vi. Building Orientation and Exterior Building Walls

The primary entrance must be located on the front facade of the building facing the primary public street adjacent to the site.

Within the station area core, 15 linear feet is the maximum length of any "blank exterior building wall plane" facing a public street for any new building and for any existing building that is either replaced or undergoes specified expansions, expenditures, or changes. All other alterations and renovations of existing buildings must not increase the amount of "blank exterior building wall plane" beyond that which is allowed for new buildings. A "blank exterior building wall plane" is any wall unbroken to the height of nine feet by any one or more of the following:

- A public doorway made of transparent materials.
- A doorway made of opaque materials and recessed at least three feet.
- A stairway directly available at street level to the public, but not fire escapes or false stairways.
- A window or fenestration opening in keeping with the architectural character of the surrounding area of at least 12 square feet in area and no more than four feet above the sidewalk at its lowest point.

Within a Transit Oriented Development Overlay District, improvements to the sides of any building facing a public street are not allowed except when in conformity to the applicable adopted transit station area plan.

vii. Driveways and Cross Access

The maximum length of any curb cut made to a public street after application of the Transit Oriented Development Overlay District is 15 feet for one-way driveways and 25 feet for two-way or joint driveways. The surface material of the sidewalk must extend across the driveway to emphasize the pedestrian way.

Any site plan or subdivision must comply with the Streets, Sidewalks, and Driveway Access Handbook and provide vehicular and pedestrian cross-access easements to adjacent properties and construct the connection if an immediate benefit can be derived. If no immediate benefit is derived, a development plan must provide vehicular and pedestrian cross-access and construction easements and arrange the site design, the grade of the connection, parking, and landscaping so when the adjoining property owner extends the connection to the property line,

the link will be completed. Internal access drives must be located to join together existing streets and/or connect to adjacent private drives so that the internal circulation functions as an integral part of the surrounding transportation network.

Developments must minimize or eliminate curb cuts along adjacent streets. Where possible, vehicular access must be shared with the adjacent properties and/or alleys should be utilized for access.

viii. Transit

To facilitate transit usage and circulation, site plans and subdivisions must provide transit stops at key nodes with easy access to the surrounding streets. Transit routes must be designed to accommodate the technical requirements of bus operations. Transit easements through and within subdivisions and site plans must be provided as requested by the Transportation Director.

ix. Improvements to Street Rights-of-Way

No improvements to new street rights-of-way are allowed within any Transit Oriented Development Overlay District except in conformity with the applicable adopted transit station area plan.

Improvements to existing street rights-of-way that are part of the applicable adopted transit station area plan must be installed whenever the properties that adjoin said street rights-of-way, or undergo specified expansions, expenditures, or changes. These required improvements to street rights-of-way must be completed prior to the issuance of a building occupancy certificate.

II. Other Key Regulations and Guidelines

A. The "Raleigh Downtown Urban Design" Guide

In November 1987, the Raleigh City Council adopted the Downtown Plan Update (known as the "Raleigh Downtown Plan") to the 1972 Greater Raleigh Central Area Plan. The Raleigh Downtown Urban Design (RDUD) guide is, in part, a synthesis and refinement of the plans which have been developed since the adoption of the 1972 plan and, in part, the development of urban design guidelines for downtown called for in that plan.

The guide states that Downtown is to be considered primarily as a Pedestrian-oriented domain. The kinds of activities and building uses and their relationship to parking and transportation will impact the quantity of pedestrians on the street. The amount of pedestrian traffic may well be a worthwhile yardstick against which to measure the health of downtown. Ease of pedestrian movement; provision for adequate area; and the appearance, safety, and comfort of these areas are critical parts of improving the quality of these spaces.

It therefore recommends that:

- Surface parking lots and parking structures which line the streets are detriments to the vitality of pedestrian life.
- Lower floors of parking structures should include retail functions in designated districts.
- Surface lots at the street edge should be landscaped to improve appearance and maintain the continuity of the streetwall.
- There should be minimal street frontage used for parking.

- To support desired pedestrian-supportive levels of density, structured parking should be encouraged.
- Pedestrian access through surface lots should be well-defined and numerous.
- Surface parking lots should be located in the interior of their blocks, or built underground when feasible.

B. Impervious Surfaces Regulations

1. City of Raleigh Stormwater Utility Fee

The City has been collecting a Stormwater Utility Fee, based on the amount of impervious surface coverage, from all property owners within Raleigh Corporate Limits since March, 2004. Since then, all owners, developers, and contractors completing a City of Raleigh Permit Application have been required to include the approved amount of new impervious surfaces (in square feet) to be constructed on the subject property. Applicants are responsible for documenting the net change in impervious surfaces associated with each individual permit on the permit application. Fees are then assessed based on the total square footage of impervious surface coverage and sent out to property owners – typically attached to the owner's Water and Sewer bill.

The City provides a "comprehensive" list of surfaces that the City considers impervious. This list includes:

- Roofs, roof extensions
- Patios
- Balconies
- Decks, including wooden slatted decks
- Athletic courts
- Swimming pools
- Walkways
- Parking areas, driveways and car ports
- Sidewalks
- Any concrete, stone, brick, asphalt, or compacted gravel surfaces

The City also identifies the following surfaces as not impervious that should not be counted toward the calculation of the impervious-surface fee:

- Ungraveled natural footpaths
- Water surfaces of lakes, streams, and swimming pools
- Lawns and other naturally vegetated or landscaped areas
- Impervious surfaces located outside of the property boundary such as public roads and city sidewalks

2. Limit on Impervious Surfaces for Vehicle Parking

A recently enacted amendment to State of North Carolina law states that areas designated for vehicle parking "shall not exceed eighty percent (80%) built-upon area", and that the remaining 20% of the area must meet either:

- "(D)esign requirements for a permeable pavement system"; or
- "Other design requirements for stormwater management…"

The purpose and intent of this policy is to protect "the surface waters of the State."

3. City of Raleigh Streets, Sidewalks, and Driveway Access (SSDA) Handbook

The SSDA Handbooks states that parking lots "should be designed to provide for safe pedestrian and vehicular circulation. Pedestrian flow should provide for as few conflicts with vehicle traffic as possible."

III. Findings

This section is focused primarily on summarizing the current zoning standards and requirements for off-street parking related to new development within the city of Raleigh. Subsequent project tasks will focus on identifying key potential improvements to these existing regulations and standards. As such, the findings below rather identify key strengths within the existing regulations and guidelines.

A. Introduction of Parking Maximums

Limited to residential development within PBODs, these maximums nonetheless serve to introduce this zoning concept and transportation demand management tool. This should help facilitate a broader implementation of this tool, to cover additional land use types and zoning districts, should such a change be sought.

B. TOD-specific Zoning Regulations

The fact that these regulations precede the transit service around which they are assumed to take affect indicates a recognition of one of the most important benefits to new transit service — reducing nearby dependence upon personal automobile ownership and travel — as well as the role of strategic parking management in supporting transit use.

C. Introduction of Bike Parking Requirements

Limited to proposed TOD Overlay Districts, the introduction of this concept is nonetheless a key step in recognizing the potential benefits of supporting this form of non-motorized transportation throughout Raleigh.

D. Emphasis on Landscaping/ Surfacing Impacts

Regulations including recent Impervious Surface ordinances indicate a growing interest in managing many of the impacts of parking areas on environmental and storm water management issues.

E. Pedestrian Access Requirements

Zoning: Sec. 10-2091 and many of the design requirements and guidelines identified above — including especially the language contained in the SSDA Handbook — indicate a level of awareness of parking's potential impact on pedestrian environments. By requiring or encouraging limits on curb cuts and provision of pedestrian routes through parking facilities, these documents provide a precedent for future regulations designed to support and encourage vibrant sidewalks in and around traditional commercial centers and residential neighborhoods throughout Raleigh.

F. Contextual Allowances for Reduced Minimum Requirements

A number of regulations summarized above provide options for developers to seek reductions in minimum parking requirements by demonstrating either site- or development-specific circumstances that indicate a comparatively reduced demand for parking.

At the same time, the City has defined a number of contexts — within the dense, mixed-use downtown environment; within pedestrian-oriented business districts; adjacent to high-quality transit; etc. — where comparatively lower levels of expected parking demand justify lower minimum off-street parking requirements.

Chapter 2. Existing Conditions Review

I. Introduction

The following summarizes a review of existing background transportation conditions in the city of Raleigh. The following key conditions were examined to help inform the on-going review of the City's zoning standards for off-street parking at new development projects:

- Development Trends – How recent projects have responded to current minimum parking requirements and other zoning standards;
- Transportation Trends – Citywide patterns of automobile ownership and commuting modes; and
- Transit Services – Current and expected conditions among local and regional service providers.

Development responses to current regulations serve as indicators and provide critical guidance in identifying strategies that can effectively address local opportunities and challenges. Trends in car ownership and use are useful measures when tailoring off-street parking requirements to respond to local conditions and demand patterns. Trends in non-drive-alone commute rates can also highlight opportunities for reducing parking requirements where demand is below the norm.

Transit services are gaining recognition as an increasingly important access management tool, as cities across the country continue to struggle with chronic traffic congestion. Parking policies, including off-street parking regulations, can play a critical role in both supporting transit use (by not encouraging driving through excessive on-site parking requirements) and taking advantage of opportunities presented by high levels of transit use (reducing development costs related to minimum requirements where transit use reduces parking demand).

These three conditions as seen today in Raleigh are summarized individually below.

A. Development Trends

Following is a table summarizing recent examples of typical development responses to existing zoning standards for off-street parking, as well as brief observations provided by the City's Development Plans Review division on each.

Figure 4 - Development Trends

Project	Required Parking	Parking Constructed	Built/ Required	Built/ 1,000 SF	Notes
Costco	744	744	1.00	5.0	This is an example of where the retail applicant didn't need to exceed our parking requirements; they probably would have rather provided less.
Wal Mart Triangle Town Center	1,051	968	0.92	4.6	83-space reduction for landscape planting area
WakeMed Parking Deck	476	716	1.50	NA	Minimum parking standards for hospitals is grossly inadequate for their actual needs.
Lafayette Retail	395	407	1.03	5.6	Applicants wanted more parking for a restaurant-heavy shopping center than 1/ 250 SF required
The Hillsborough	163	216	1.33	NA	A project in the Downtown Overlay District that is planning for more parking than required
Rooms to Go	136	271	1.99	5.0	The developer parked development at the general retail level for site resale/re-use value
Shops at Alexander Place	419	514	1.23	4.9	Another over-parked shopping center

As indicated above, a common development response to current minimum parking requirements appears to be building more spaces than are required. In one instance (Lafayette Retail), the developer apparently felt that the particular shopping center being planned contained more restaurants than the standard use-mix anticipated by the zoning requirements and built beyond the minimum requirement. In another (Rooms to Go), the development of a land use with a low space-demand/ square-foot ratio (retail furniture store) was built with roughly twice the required amount of spaces in order maintain the marketability of the site for future uses.

Conversely, Figure 4 indicates that big box retail developments may be an example of a major project type for which developers desire less parking than is required. Some of these projects, as indicated, may be looking for alternative options to the minimum requirement that are currently not available.

B. Transportation Trends

The maps on the following pages present key transportation trends that will be considered during the current review of off-street parking requirements in Raleigh – the

average number of vehicles “available” to each household and the mode-choice patterns for commute trips, based on job locations throughout the city[2]. The first map will be most relevant to zoning standards and strategies affecting residential development, while the second make can be useful for informing regulation of employment-oriented developments.

As can be seen from these maps, clear patterns of car ownership and commute mode choice emerge across the city and surrounding areas. Central parts of the city, as would be expected, are marked by lower than average rates of vehicle ownership and drive-alone commuting. Areas to the southeast of the city center report the lowest level of vehicle availability, averaging less than one car per household. At the same time, area employees indicate a reduced reliance upon drive-alone commuting, and a higher than average use of carpools and transit, for job-related trips. In comparison, areas to the east and west of downtown are marked by below-average car-ownership rates among residents as well as increased reliance upon non-motorized commutes (walking and cycling) among employees.

[2] All Mode Share data is based on

Figure 5 - Vehicles per Household in Raleigh

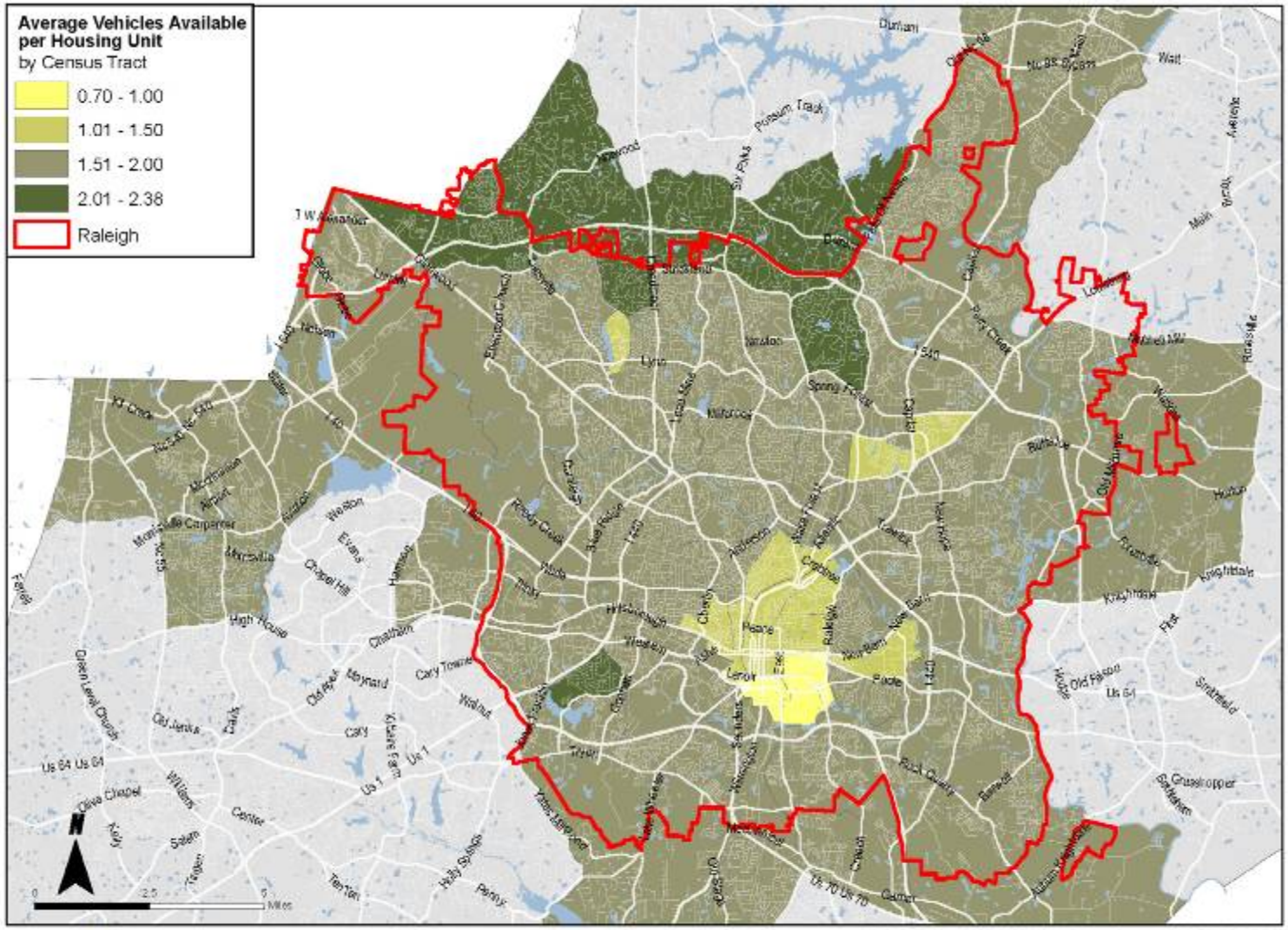

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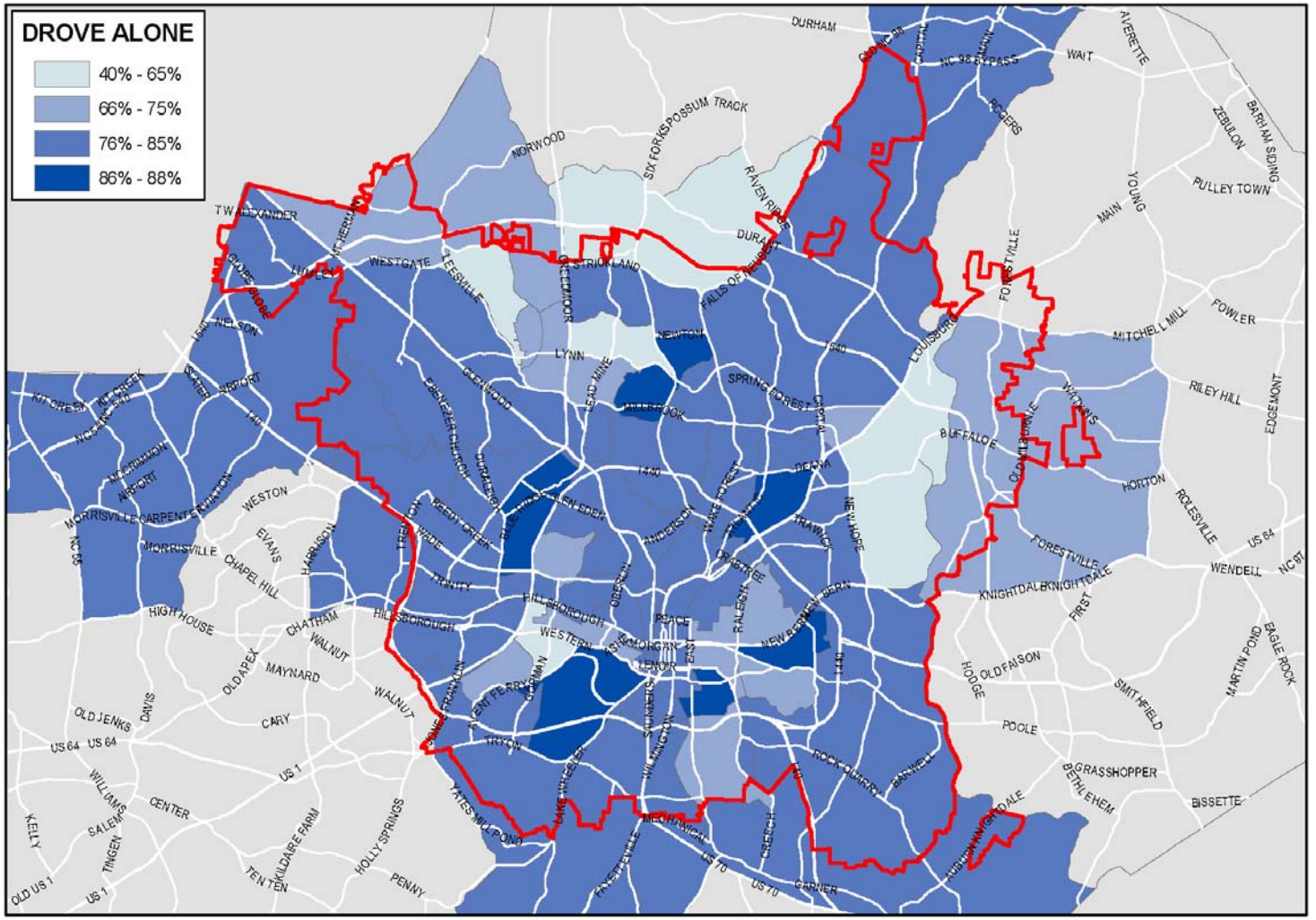
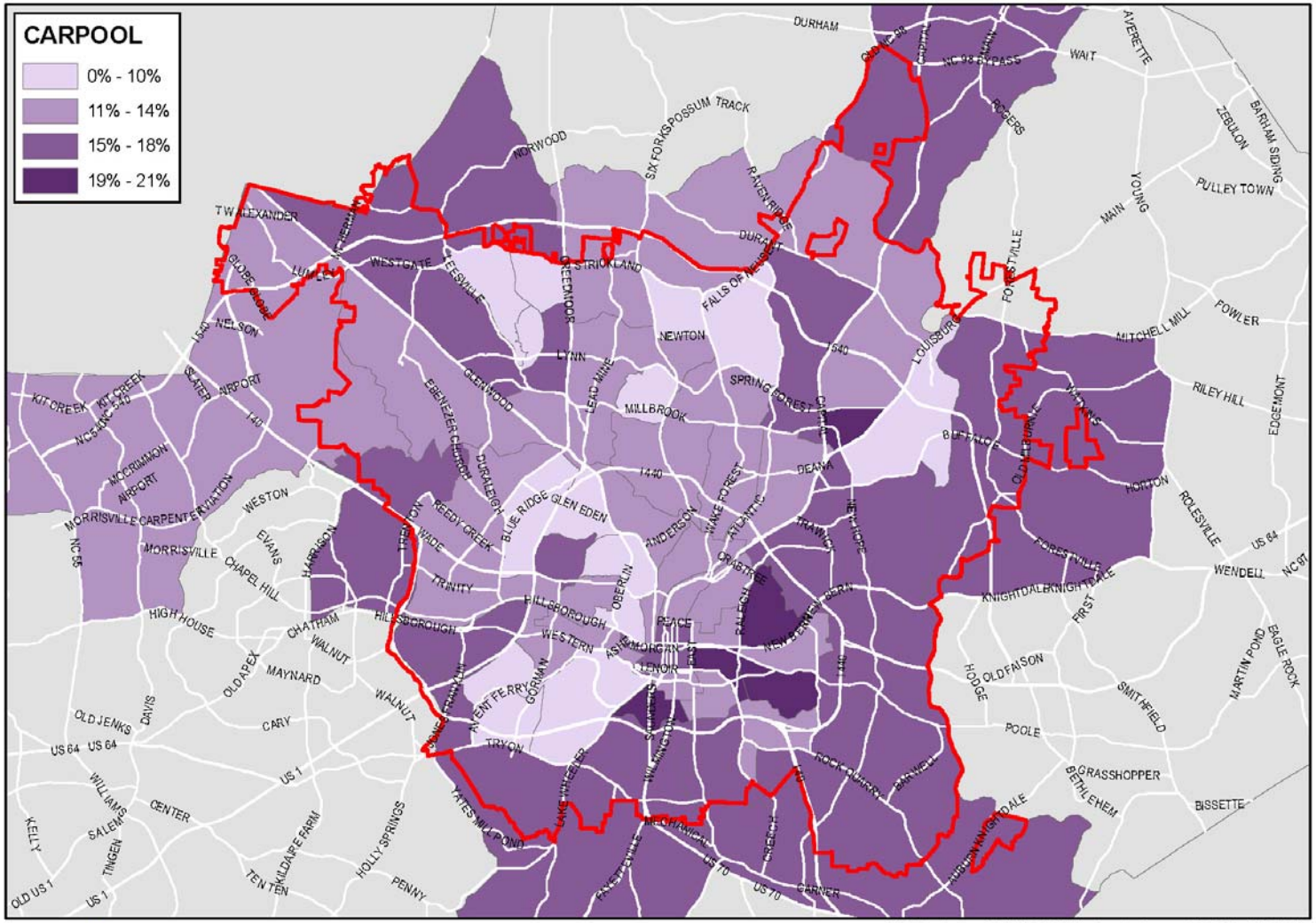
Figure 6 - Commute Share: Drove Alone (Based on Place of Work)



GIS Data Source: CTPP 2000, Wake County, Census 2000, City of Raleigh

Nelson|Nygaard consulting associates

Figure 7 - Commute Share: Carpool (Based on Place of Work)



GIS Data Source: CTPP 2000, Wake County, Census 2000, City of Raleigh

Nelson|Nygaard consulting associates

Figure 8 - Commute Share: Transit (Based on Place of Work)

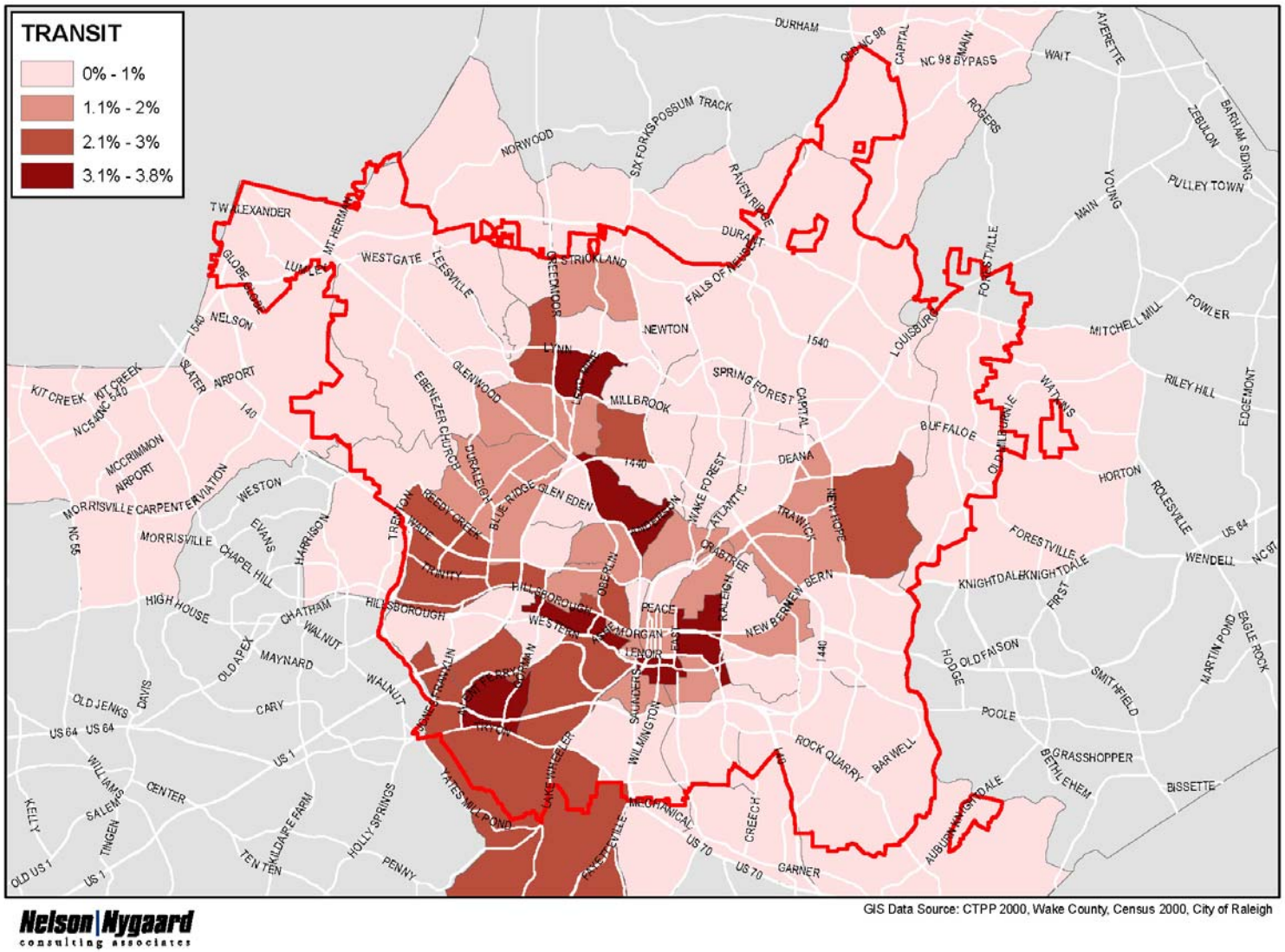
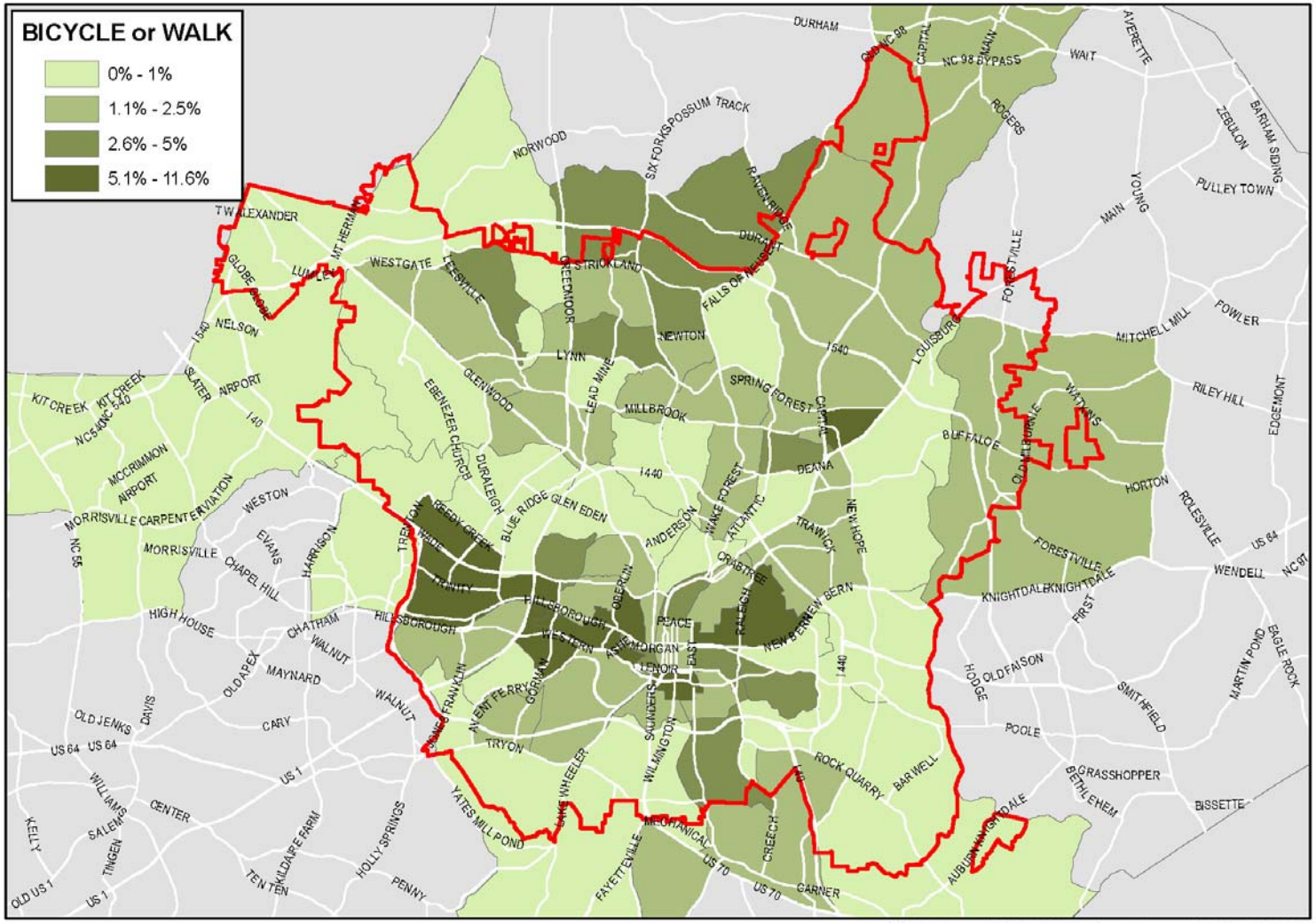


Figure 9 – Commute Share: Non-Motorized (Based on Place of Work)



GIS Data Source: CTPP 2000, Wake County, Census 2000, City of Raleigh

Nelson|Nygaard consulting associates

C. Transit Conditions and Trends

The Raleigh area is served primarily by two transit services—Triangle Transit Authority (TTA) and Capital Area Transit (CAT). In addition, there is North Carolina State University's "Wolfline" that is oriented to the University community, but is open to the general public, and several other local transit services.

TTA provides regional bus service with 12 standard and two express bus routes. TTA also provides a rideshare-matching service through vanpools and carpools that are coordinated through an online rideshare matching tool — http://www.sharetheridenc.com/. TTA also provides park and ride lots in the Triangle area.

CAT has 18 standard and seven connector bus routes as well as one express bus route. In addition, CAT maintains 14 park and ride lots in Raleigh.

In 2005, the Triangle Seamless Transit Project was created to coordinate services among local and regional transit providers to meet transportation needs and ease commuting within the rapidly growing region. A centralized clearinghouse of information and promotion — GoTriangle — was created as part of the project. The GoTriangle website — www.gotriangle.org — provides comprehensive transit service information, as well as information on carpool, vanpool, telework, and non-motorized (biking and walking) commute options.

GoTriangle also provides a critical element of alternative mode commute support through its Emergency Ride Home program which provides registered commuters who regularly ride the bus, vanpool, carpool, bike, or walk to work with a reliable, emergency ride home when one is needed.

1. Ridership

In October 2007, TTA transported 87,700 riders, an increase of over six percent from the same time frame in the previous year. During this same period, CAT transported over 401,000 riders, a nine percent increase over the previous year. In 2006, the Wolfline recorded slightly less than 1.8 million passengers, a 150,000 per-month average.

Recently, the increasing cost of fuel seems to have resulted in a rapid increase in transit ridership. In a press release dated May 14, 2008, GoTriangle noted that ridership for all regional transit agencies rose in April of 2008. "We have experienced a significant increase in ridership throughout the Triangle," said Brian Fahey, manager of GoTriangle's Transit Information Center. "Not only has ridership risen, but the number of calls we receive for transit information is up. Call center operators are talking to more first-time transit riders." According to GoTriangle,the region's public transportation providers together carried more than 1.7 million riders in April 2008.

Figure 10 - Recent Transit Ridership

Transit System	% Increase	Apr-08	Apr-07
Capital Area Transit (CAT)	14.0%	377,826	327,586
Cary Transit (C-Tran)	25.0%	6,963	5,250
Chapel Hill Transit	30.0%	621,000	477,000
Durham Area Transit Authority (DATA)	9.5%	417,995	381,720
NC State University Wolfline	16.3%	219,942	189,148
Triangle Transit	20.5%	83,926	69,628

2. Expansion and Growth

CAT Five Year Transit Plan – CAT is currently in the third implementation year of its Five Year Transit Plan. The plan calls for: reducing headways (the time between arrivals) on a number of routes; extending other routes; and creating an entirely new route to serve Southeast Raleigh. Fifteen buses were recently acquired to serve the expansion, and money has been allocated for new benches and shelters.

CAT has identified enhancements to local bus service as a necessary investment for delivering riders into any of the proposed local or regional rail system (see below) which may be built in the future – an investment requiring a significant infusion of capital into CAT.

Collectively, the above noted expenditures, as well as others including an expansion of the Moore Square transit center which serves as the transfer hub for nearly all CAT routes and is at capacity, come to nearly $32 million.

TTA Regional Rail Plan – The TTA Regional Rail Plan was adopted in the mid-1990s to guide regional transit planning efforts in the Triangle region. Specific goals of the plan include:

- Providing quality travel choices;
- Encouraging more compact development in the Triangle Region; and
- Providing an alternative transportation mode in congested regional travel corridors.

The plan includes regional rail service, expanded bus service, shuttles, park-and-ride facilities, and enhanced transit access for pedestrians and bicycles. Twelve stations were proposed for the regional rail system — five of which would be located in Raleigh.

3. Other Projects and Plans

In addition to the Regional Rail Plan, a number of proposals and studies have explored various possibilities for introducing commuter and/ or regional rail service into Raleigh.

The North Carolina Railroad Company is currently conducting a feasibility study for operating commuter services on their rail lines. The study is focused solely on the capital requirements of accommodating this type of passenger service.

The **Shared Corridor Expansion Study** will consider commuter rail on freight lines between Goldsboro and Greensboro, North Carolina.

Downtown Raleigh Multi-Modal Transportation Center Study – A transit study is being conducted in Raleigh for a multi-modal transit station — to be located where the rights-of-way of CSX, Norfolk Southern, and the North Carolina Railroad meet within Downtown Raleigh's Warehouse District.

The **Southeast High Speed Rail** project is intended to provide travelers with an alternative to medium- and long-distance auto and air trips. The proposed service would extend Acela-style rail service south from Washington, DC into Raleigh in a first phase, and eventually on to Charlotte and Atlanta. Between Raleigh and Petersburg, the service would run along a corridor known as the Seaboard "S" line which is partially abandoned, and which corresponds to the TTA regional rail project. The proposed SEHSR station is located on the north side of the Boylan Wye. A Tier II EIS is currently being completed for the portion between Richmond, VA and Raleigh, NC. This project is proposed to begin operations between 2013 and 2015.

The **Eastrans** study, completed in 2004, explored the feasibility of commuter rail service to downtown Raleigh from points east utilizing two potential corridors: the North Carolina Railroad (NCRR) corridor to Goldsboro, and the Norfolk Southern corridor to Wilson. At this time, no further significant planning effort has been advanced. If implemented, such service would need to be accommodated as part of the multi-modal transportation center.

D. Conclusions

1. Development Trends

The amount of parking constructed for projects within Raleigh appears to often be higher than the minimum required by current zoning. Consideration should be given to assessing whether the amounts being built are meeting the City's transportation and stormwater runoff objectives – either in general or for specific uses.

The amount of parking required for medical uses appears to be much lower than actual demand for some projects. Consideration should be given to assessing if this has resulted in problematic instances of "under-parked" developments. The current standard does not prevent developers from building above the stated minimums where and when their demand projections indicate a higher level of need. Thus it is assumed that the current regulations do not prevent or create any significant barrier (direct cost or procedural delay) to building significantly more parking than is required. This low requirement may in fact provide an opportunity for some projects to go forward where either land constraints prevent cost-effective parking construction or alternative modal options provide an opportunity for reduced parking demand.

Conversely, cases where it appears developers would have preferred to build less than the minimum indicate a potential opportunity to offer more options for such reductions in

return for investments in alternative transportation, landscaping, stormwater management, etc.

2. Transportation Trends

Central areas of the city report distinct tendencies in car ownership and commute patterns. Many of these patterns present options for zoning to support patterns that are in line with stated City transportation and land use objectives such as: increased population densities; reduced housing costs; and lower rates of single-occupant vehicle commuting.

In areas where lower vehicle ownership rates are the norm, requirements to develop more parking than is needed is likely to significantly increase housing costs unnecessarily.

In areas with higher carpooling and transit use, zoning can support these desirable trends with strategies that go beyond parking requirements at jobs-based uses, such as:

- Requiring preferential placement of, and charges for, rideshare vehicles; and/ or
- Requiring "parking cashout" programs where parking provisions or subsidies are matched by equivalent benefits for non-drivers; and

In areas high rates of non-motorized commutes, zoning can be supportive by requiring showering and locker facilities at jobs-based uses as well as cashout programs for employers that provide free or subsidized on-site parking.

3. Transit

Recent changes in transit services and organization present a number of reasons to anticipate that use of transit to travel in and around Raleigh and the surrounding region will become an increasingly popular option for residents, commuters, and visitors. Coordination among the region's many services, including the informational and promotional portal provided by GoTriangle, is a promising development.

Travelers not accustomed to relying upon transit service, especially visitors, bring a heavy demand for information and persuasion to shift modes. Centralization and simplification of service information are two critical strategies for overcoming this ridership barrier. Another key step will be the implementation of the CAT proposed bench and shelter improvements which present an important opportunity to place new-rider-friendly service and information on the ground at the point of entry for the transit service.

Ridership trends are also very promising; with some data indicating that the steady accumulation of new riders in recent years may be further accelerating in recent months. While the feasibility of new or expanded service plans almost always hinges upon the viability of funding sources, these ridership trends present a significant opportunity to increase transit's leverage in the competition for transportation investments.

Chapter 3. Best Practices

I. Introduction

This section presents a summary of best practices that have emerged out of recent efforts to re-evaluate traditional zoning requirements for off-street parking. These practices fall roughly into two categories:

- Broad strategies that represent major policy shifts and regulatory changes; and
- Support strategies that affect finer changes within existing regulatory frameworks.

Following this is an implementation survey, beginning with "leading cities" that have made major changes to their zoning codes, followed by a longer series of cities that have implemented key strategies worth noting.

II. Context

Many cities have recently undertaken to review and update their zoning regulations, especially regarding minimum parking requirements, for new development. Most of the regulations had changed little since first being adopted in the middle of the last century – the height of enthusiasm for the future of personal automobile travel. The most common objectives of such reviews have been to:

- Address the effect of minimum requirements on congestion and overall vehicle travel;
- Address the effect of minimum requirements on housing costs;
- Decrease negative impact of parking provision on pedestrian and bicycle networks;
- Reduce negative impacts of parking provision on historic and/ or downtown districts;
- Create and support a Shared Parking/Park Once environment in which the bulk of parking activity is captured within a centralized, shared public inventory; and
- Encourage and support "smart growth" development patterns and more resource-efficient forms of travel.

More recently, innovations in on-street management have called into question the need for any minimum parking requirements. Particularly, the great deal of promise inherent in demand-responsive pricing of commercial spaces and the increasingly versatile practices being implemented within residential permit parking programs may have profound implications for the future of zoning requirements. Many planners are beginning to ask the existential question –

> *If on-street management practices can be improved to ensure availability, even on the busiest commercial blocks and in near-downtown residential neighborhoods, are minimum off-street requirements becoming obsolete?*

Answering that question should be preceded by a look at the origins and original intentions of minimum parking requirements.

A. When did Parking Requirements First Appear, and Why?

In 1923, Columbus, Ohio adopted the first off-street parking requirement, requiring one parking space for each apartment in new apartment buildings. In 1939, Fresno, CA, became the first city to adopt minimum parking requirements for a non-residential use, adopting them for hotels and hospitals. Why were they adopted? The City of Pasadena's zoning code reflects a common rationale; that the purpose of minimum parking requirements is to "alleviate or prevent traffic congestion and shortages of curbside parking spaces." [3]

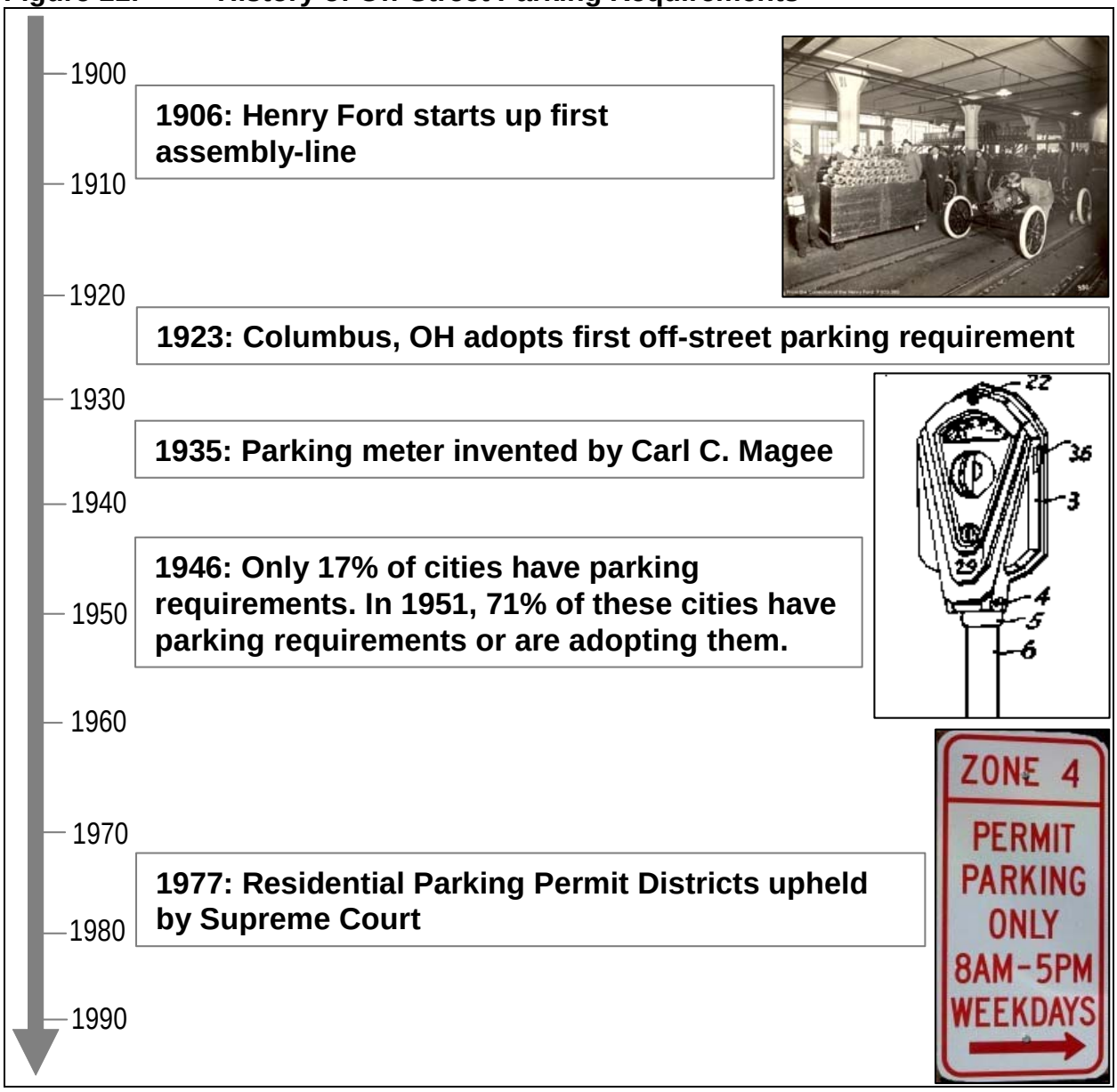
Why was it believed that setting minimum parking requirements would alleviate traffic congestion? By the 1920s, the new problem of "spill-over parking" had arrived in many downtowns. Automobiles filled up all of the curb parking in front of shops and apartments, and any nearby private parking, and then sometimes spilled over into nearby neighborhoods, crowding out spaces used by local residents and their visitors.

In search of free, convenient parking, motorists often took to circling the streets surrounding their destination, waiting for a space to open up. Instead of searching for parking, many motorists simply double-parked, clogging traffic lanes and greatly increasing congestion. The essential concept of minimum parking requirements was that if each destination provided enough parking so that, even when provided for free, there would be plenty of spaces, the incentive for motorists to spill out onto local streets would be removed. Without motorists circling the block looking for parking, traffic congestion would be significantly reduced.

While most cities did not explicitly require parking to be offered for free, they did set minimum requirements that were simply high enough that it made sense for most destinations to offer the parking for free. This practice has become normalized to the extent that today parking is free for 99% of trips made within the United States.[4]

[3] City of Pasadena Zoning Code, Chapter 17.46.010.
[4] Shoup, Donald "The Trouble with Minimum Parking Requirements", *Transportation Research*, 1999.

Figure 11: History of Off-Street Parking Requirements



1. The Results

What were the consequences? Minimum parking requirements have become standard practices across the country, implemented by large cities and small towns. And while localized congestion results are mixed, regional congestion has grown steadily into a national epidemic. "In recent years, millions of U.S. metropolitan area residents have come to regard traffic congestion as their most serious local and even regional problem – with good reason", states Anthony Downs in his book "Still Stuck in Traffic."[5]

Among 75 metropolitan areas studied by the Texas Transportation Institute:

[5] Brookings Institution Press, 2004

- The average percentage of daily traffic subjected to congestion nearly doubled between 1982 and 1999, rising from 17 percent to 33;
- The average length of congested periods increased from 2-3 hours to 5-6 hours over the same period; and
- Congestion "wasted" an estimated $67.5 billion during 2000, based on lost time and fuel consumption.[6]

While minimum parking requirements can effectively eliminate parking spillover by mandating ample supply along with the best price (free) for the best location (on-site), these spaces clearly do not eliminate traffic and congestion. Hawley Simpson, who conducted the first research on cruising for parking (and who later became president of the Institute of Traffic Engineers), predicted the problems that later arose from free off-street parking. "Rather than assisting in solving the street traffic problem" he said, "it may very probably have the opposite effect by inducing a large amount of unnecessary vehicle usage."[7]

Minimum parking requirements worsen traffic congestion through a three step process:

1. Minimum parking requirements are set.
2. Parking is typically provided for free — with construction and maintenance costs added to the price of the goods, services, housing, etc. connected to the parking.
3. This "bundling" of parking costs into the cost of everything else skews travel choices toward cars and away from public transit, cycling, and walking.

The congestion that is avoided locally has simply shifted to the regional road system. By increasing exponentially the quantity of parked cars that can be absorbed in each district, minimum parking requirements have swelled the volume of vehicles accessing roadways on the regional scale.

2. Contemporary Options

So back to the existential question – if minimum parking requirements have contributed to worsening regional congestion while producing spotty local traffic improvements, and if on-street management practices can effectively prevent spillover, are minimum parking requirement still necessary? Some of the most innovative responses to this question are summarized below.

III. Zoning Reform Best Practices

A. Broad Strategies

[6] Downs, 2004.
[7] Shoup,. Page 280.

1. Reducing/"Tailoring" Minimum Requirements

Most minimum parking requirements enacted by local jurisdictions take into account only two variables: land use and the size of development. They are typically expressed in terms of the number of spaces required per square feet of a particular land use, or per residential unit.

In reality, however, parking demand is affected by many more variables, such as:

- The geographic context of a development – encompassing factors such as the quality of the local pedestrian environment, the number of other land uses within walking distance, and the availability and quality of transit;
- The demographic characteristics of residents; and
- Demand management programs such as parking pricing and car-sharing.

Furthermore, vehicle ownership levels (and thus residential parking demand) typically vary considerably between different parts of a city. Local jurisdictions can "tailor" their zoning codes to take these variations into account. Following are factors upon which tailoring reduced minimum parking requirements are most commonly based, as well as the travel behavior assumptions implied in each:

- Unit Size – Smaller households tend to own fewer vehicles;
- Affordable Housing – Vehicle availability rates tend to correlate inversely with household income rates. ;
- Senior Housing – Retirement-age adults tend to own fewer vehicles than working-age adults;
- Rental Units – Rental households tend to have fewer vehicles available, on average, than do owner-occupied households; and
- Transit Corridors/Downtown – Parking demand is expected to be lower in areas that are well served by transit, and in mixed-use downtown zones that offer employment and services within walking distance.

a. Examples

- Milwaukee, WI has no minimum parking requirements for any downtown land use except high-density housing, where the ratio is two spaces per three units.
- Seattle, WA allows reductions in minimum parking requirements based on several factors, including:
  - Affordable housing – Reduction to 0.5-1.0 spaces per unit, depending on income, location and size of unit;
  - Senior housing and housing for people with disabilities;
  - Dedicated on-site car-sharing parking in multi-family developments;
  - Location – No parking minimums in downtown, reductions in mixed-use, dense neighborhoods; and
  - Transportation Demand Management practices.
- Pasadena, CA has reduced its minimum parking requirements for new development in Transit Oriented Developments and within its Central District.

2. Eliminating Minimum Requirements

The most obvious advantage of eliminating, versus reducing or tailoring, minimum parking requirements is that it provides the opportunity for regulators to avoid the "guessing game" of demand projections. While tailoring requirements based on contextual qualifiers can be effective in reducing the risk of over-estimating parking demand, it does not preclude over-estimating, and it can make zoning regulations even more labyrinthine than they have already become. Furthermore, the elimination of minimum requirements can promote development in areas where land is expensive, or at sites where parking provision is impractical (oddly configured dimensions) or impossible (historic re-use).

Many cities are deciding that minimum requirements are simply no longer needed. Some have concluded that developers do a better job anticipating the parking market at their developments than zoning codes ever could. The developer's projections are made on a site- and context-specific basis for each project, representing a much finer estimating instrument than can be used to set zoning ratios. Furthermore, its decidedly in a developer's best interest to get their estimates right. Over-anticipating demand, especially in areas with high land values, would add significant unnecessary cost to a project. Under-parking a project, on the other hand, can reduce its marketability.

Furthermore, cities can rely on a growing set of effective on-street parking management tools — such as demand-responsive curb pricing and flexible residential permit program regulations — to prevent spillover should under-parked projects result from the elimination of minimum requirements.

a. Examples

Several cities across the United States, including the ones provided below, have completely removed minimum parking requirements in downtown or Central Business District areas.

- For commercial development: Boston, MA; Columbus, OH; Coral Gables, FL; Eugene, OR; Fort Myers, FL; Fort Pierce, FL; Los Angeles, CA; Milwaukee, WI; Olympia, WA; Philadelphia, PA; Portland, OR; San Diego, CA; Seattle, WA; Spokane, WA; Stuart, FL.
- For multi-family residential (1-2 bedroom): Eugene, OR; Fort Myers, FL; Fort Pierce, FL; Los Angeles, CA; Milwaukee, WI; Olympia, WA; Portland, OR; San Diego, CA; San Francisco, CA; Seattle, WA; Spokane, WA; Stuart, FL.

3. Establishing Maximum Thresholds

In contrast to minimum parking requirements, parking maximums restrict the total number of accessory parking spaces that can be constructed for a project. This approach can be used to actively promote alternatives to driving, and explicitly reduce the volume of parking attached to certain uses or all uses in certain areas. Reasons for setting maximum requirements typically include a desire to:

- Restrict vehicular traffic generated by new development;
- Promote alternatives to the private automobile;
- Maximize land area for other uses; and
- Preserve open space and/or limit storm water runoff.

Parking maximums can be introduced anywhere where there are or could be measures in place to combat overspill. While the policy is most likely to be appropriate in transit corridors, downtowns, and areas of chronic traffic congestion, it can be useful in any district that wants to limit vehicular traffic or the amount of land devoted to parking.

Maximum parking requirements generally alleviate traffic congestion and reduce auto use through a three step process:

1. Maximum parking requirements are set low enough to so that if parking at a location is given away for free, there will be a shortage.

2. In response, parking at most locations is provided at a price, revealing at least part of the costs associated with constructing on-site parking. Another response might be to offer attractive subsidies for alternative transportation options (in the form of free transit passes or a "parking cashout" program), to reduce demand and avoid a shortage.

3. Removing parking subsidies (or providing equally strong subsidies for other modes) then brings travel choices back into balance, toward public transit, cycling and walking.

As Professor Donald Shoup, parking economics expert and planning professor at University of California, Los Angeles, describes the situation:

> *If we want to reduce traffic congestion, energy consumption, and air pollution, the simplest and most productive single reform of American zoning would be to declare that all the existing off-street parking requirements are maximums rather than minimums, without changing any of the numbers, just as the London Borough of Kensington and Chelsea did in 1995*.[8]

a. Examples

- Portland, OR, has adopted parking maximums. In large parts of the city, the minimums have been wholly converted to maximums. In other parts, minimums remain but are accompanied by maximums to limit the amount of parking a developer can provide.
- Parking maximums are in force in all or a portion of many other cities across the United States, including: San Francisco, CA; Seattle, WA; Cambridge, MA; Gresham, OR; Helena, MT; Jefferson County (Louisville), KY; Pittsburgh, PA; Redmond, WA; Gainesvill, FL; and San Antonio, TX.

B. Supportive Strategies

Other strategies, which can support these broad efforts to reduce parking impacts, have also been implemented with many positive results in many cities.

1. Establishing In-Lieu Fees

Providing a fee alternative to meeting on-site requirements is gaining favor in many cities as a means of:

- Reducing the overall number of parking spaces;

[8] *Zoning Practice*: "Ask the Author", February, 2006.

- Reducing the number of parking sites and pedestrian/vehicle conflict points; and
- Supporting the development of a publicly-controlled, shared parking supply that can be managed as an economic development asset within urban districts.

a. Common Characteristics of In-lieu Fee Programs

The following are the common characteristics of existing programs:

- A separate fund is established that is reserved for the future provision of publicly accessible parking spaces or the funding of alternative transportation improvements.
- The program is available within a specified area only, such as a defined downtown zoning district.
- Payment is typically due prior to issuance of a building permit or a certificate of occupancy.
- The amount of the in-lieu fee is based on the cost of providing structured, or below-grade, parking – with the fee remaining attractively lower than the alternative cost of providing parking.
- Strict standards for location of parking facilities are not defined (such as "spaces must be provided within 500 feet of each individual development parcel for which in-lieu fees are paid"), nor are specific locations established when the program is implemented. Instead, parking location decisions are made over time, reflecting the changes in need for parking and opportunities to provide parking. In other words, developers (or their lenders) are not guaranteed that a specific number of spaces will be provided within a specific walk distance.

b. Examples

- Arlington County, VA – The County can accept onetime payments for each space of required shared parking that is not built. The County Manager is to establish the amount of payment annually based on the relative cost of building structured parking.
- Palo Alto, CA – The City offers developers in downtown the option of contributing $51,000 per space to the City's in-lieu fee fund, as an alternative to providing on-site parking.
- Boulder, CO – Boulder treats its in-lieu fees as general transportation funds. These monies have been used for downtown transit improvements, as well as parking.

2. Encouraging Shared Parking

Arlington County's Columbia Pike District Parking Strategy encourages sharing spaces by setting a limit on the number of reserved parking spaces allowed, while placing no limit on the amount of shared parking allowed on-site. Sites over 20,000 square feet in land area have the following requirements:

- A maximum of two spaces per residential unit may be made available as reserved parking.
- There are no maximum limits on shared parking.
- Up to 100 percent of all required parking may be provided off-site if the said parking spaces are located within a ¼-mile radius of the subject site and a legally binding parking agreement meeting zoning code standards is provided to the Zoning Administrator.

3. Requiring Shared Parking

Arlington County's Columbia Pike Parking Strategy also explicitly requires sharing spaces. Sites over 20,000 square feet in land area have the following requirements:

- A minimum of 1 and 1/8 parking spaces per residential unit, of which a minimum of 1/8 parking space per residential unit shall be provided as Shared Parking.
- New on-street parking spaces created in conjunction with the development may be counted toward the minimum requirement for shared parking.

4. Requiring Bike Parking

Parking accommodations for bicycles can be required in the same manner that minimum parking requirements regulate on-site provisions for automobiles. Many cities have adopted ratios of bike accommodation tied to square footage of uses or residential units. These requirements help support bicycle mobility and boost bike mode shares for local trips. They can also reduce parking demand by expanding the range of non-motorized accessibility within urban districts. Expanding this range can be very effective in filling in transit service gaps, and reducing parking demand tied to short- and medium range- trips.

a. Examples

- Chicago, IL completely re-wrote its zoning code in 2004. The new code requires one bike space for every two required vehicle spaces. Whenever bicycle parking is required, at least 2 bicycle spaces must be provided. No use is required to provide more than 50 bicycle parking spaces. The zoning also stipulates a number of design requirements for required bike parking including covering, lighting, dimensions, security, and location.
- San Francisco, CA requires one space of bike parking for every built automobile space for all new housing over 4 units in the city.

5. Unbundling

Most housing arrangements provide tenant parking as part the lease or purchase cost. Unbundling this relationship by requiring that parking be purchased or leased separately reduces housing costs for households that own fewer cars than average, and makes clearer the cost of owning and storing a car. This strategy is also effective in providing developers with added financial incentive not to build parking for which there is not a paying market. Unbundling residential parking can also significantly reduce household vehicle ownership by revealing some of its hidden costs.

Some communities use zoning to require that parking be sold or leased independently from housing units or office space. Other communities require that parking be a separate line-item in lease contracts, even if spaces are automatically included. Once renters become aware of what they pay for parking they may decide to negotiate changes, perhaps renting fewer spaces or trading parking spaces with other residents.

Another approach is to reduce minimum parking requirements, or allow parking beyond maximum thresholds, only for developments that un-bundle parking. This recognizes that, given a choice, many residents will reduce their parking demand.

a. Examples

- San Francisco, CA, in two recent major amendments to the Planning Code, has required that the cost of parking be unbundled from the cost of housing for both renters and homebuyers in most areas of the city. The City also has very low maximum parking restrictions in its Downtown. To exceed them, parking costs must be unbundled.
- Bellevue, WA, a rapidly growing city in King County (Seattle), requires downtown office buildings of more than 50,000 square feet to identify the cost of parking as a separate line item in all leases, with the minimum monthly rate per space not less than twice the price of a bus pass. For example, since the price of a monthly bus pass was $72 in 2003, the minimum price of a leased parking space was $144 a month.
- Bellevue is perhaps unique in routinely requiring the unbundling of parking costs from office leases. This innovative policy has several advantages. It makes it easy for employers to "cash-out" parking for employees (that is, to offer employees the value of their parking space as a cash subsidy if they do not drive to work), since employers can save money by leasing fewer spaces when fewer employees drive. It also makes it easier for shared parking arrangements to occur, since building owners can more easily lease surplus parking spaces to other users.

6. Car-Share Parking

Zoning can be used to facilitate car-sharing by requiring that developments with dedicated, on-site parking offer one or more spaces to established car-sharing organizations. This is typically required to be only a “right of first refusal” form of offer – if the organization decides to pass on the space/s, they do not have to be offered again.

a. Example

San Francisco, CA requires car share spaces citywide at the ratio of 1 dedicated space for car sharing vehicles for each 200 dwelling units. Studies have shown that car-sharing services in the Bay Area reduce the number of vehicles people own and the number of car trips taken.[9]

7. Tandem Parking

Many cities allow for tandem configuration of parking spaces built to meet minimum parking requirements contingent upon the provision of attended (valet) parking services.

a. Example

Gainesville, FL allows required off-street parking to be placed in a tandem configuration when administered as a valet parking service. The area used for tandem parking must be clearly designated on a development plan and the administered parking service must be maintained. If and when the service is discontinued, the regular off-street parking configuration of aisle and spaces shall be reinstituted and the minimum parking spaces required shall be provided. When using this option the property owner must demonstrate that private streets, vehicular maneuvering areas, service areas, loading and unloading area, queuing areas and any regular parking space can function efficiently and will not obstruct the efficient flow of traffic, service, utility and vehicles on the site.

C. Leading Cities

[9] http://repositories.cdlib.org/iurd/wps/WP-2003-05/

The following section describes examples of cities that have implemented a number of innovative zoning changes.

1. San Francisco

a. Parking Requirements Downtown

San Francisco was one of the earliest cities to introduce maximum parking requirements for office uses in its downtown core. Under the "Transit First" policy, parking may take up only up to 7% of a building's gross floor area. This is equivalent to allowing a maximum of .233 parking spaces per thousand square feet of development. New buildings must have an approved parking plan prior to receiving an occupancy permit. In some cases, only short-term parking is allowed; in others, a mix of long-term, short-term and carpool parking is approved. The City also levies a Transit Impact Development Fee for downtown office development – a policy recently extended to all non-residential uses, and to all parts of the City.

These parking restrictions have been challenged in recent years. Nevertheless, recent major projects have been designed with little or no parking. The Sony Metreon, a four story, 350,000 square foot entertainment center, opened in June 1999 amid predictions that it would create a parking crisis and gridlock. The project was built with no parking. The majority of users arrive by foot and transit, and the remainder can park in the existing 2,600-space 5th & Mission Garage across the street. As of March 2000, peak utilization of the garage has averaged 78%, with not a single parking shortage period in the evening when visitation to Metreon peaks.

The City's downtown ballpark, SBC Park, faced dire predictions that it would create gridlock and parking shortages because everyone would drive there. Instead, the park's 5,000 space lots do not regularly fill. According to Bond Yee of the Department of Parking and Traffic, 60% of ballpark fans are taking transit even to the relatively remote Ballpark location, exceeding planners' initial goals.[10]

The City is currently considering extending maximum parking requirements – or at least abolishing parking minimums – in other transit-rich parts of San Francisco.

b. Zoning

In the summer of 2006, San Francisco enacted a new zoning ordinance affecting downtown commercial zones (C-3) in an effort to reduce traffic congestion, increase housing affordability, and create a safer and more livable street environment for walking, bicycling, and public transit. The most important sections of the ordinance establish maximum parking requirements for residential units, eliminate the remaining vestiges of minimum parking requirements, require that car-sharing services be offered spaces where on-site parking is provided, and require the unbundling of parking costs from housing costs in developments contain more than ten units.

The main portions of the ordinance include:

1. Elimination of the previous minimum off-street parking requirement of one space per four dwelling units.

2. Establishment of a new maximum parking requirement of 0.75 spaces per dwelling unit for one bedroom units and one space per dwelling unit for two bedrooms units.

[10] Interview with Bond Yee, 2006.

3. Requirement of car-share parking spaces in all newly constructed residential buildings (if parking is made available).

4. All residential parking costs in new structures over ten dwelling units must be unbundled.

c. Unbundled Parking

San Francisco now requires the unbundling of parking costs from housing costs in both downtown commercial and residential zones (DTR and C-3 Districts) in all residential structures over ten dwelling units. The Planning Code, quoted below, is a good example of ordinance language for establishing this requirement:

Article 1.5: Off-Street Parking and Loading, Sec. 167:
"..(a) In DTR and C-3 Districts, all off-street parking spaces accessory to residential uses in new structures of 10 dwelling units or more, or in new conversions of non-residential buildings to residential use of 10 dwelling units or more, shall be leased or sold separately from the rental or purchase fees for dwelling units for the life of the dwelling units, such that potential renters or buyers have the option of renting or buying a residential unit at a price lower than would be the case if there were a single price for both the residential unit and the parking space…"

The ordinance also requires inclusionary affordable units to have the same opportunity to purchase or lease parking spaces as other units.

SOMA Studios and Apartments, San Francisco is one example of the results of San Francisco's policy of encouraging the unbundling of parking costs from housing costs. Unbundling parking costs in this development lowered parking demand, freeing up space for a childcare center and 19,000 square feet of neighborhood serving retail, including a market. The new five-story building combines 74 family apartments with 88 small studios, a parking garage and lobby spaces for the four floors of housing above. There are a total of 66 parking spaces available (.38 spaces per unit).

2. Arlington, County, VA

a. Reduced Parking Minimums Close to Metro Rail Stations

In the Rosslyn-Ballston corridor, the County's Zoning Ordinance significantly reduces minimum parking requirements for certain uses. For commercial development within ¼-mile of a Metro Rail station, they are halved from 1 per 530 square feet to 1 per 1,000 square feet. For retail and service-commercial uses within 1,500 feet of a Metro station, they are waived entirely for the first 5,000 square feet of development. Actual parking ratios are often lower, following negotiations between the County and developer – in some cases, no additional parking is required.

b. Parking Maximums

The National Capital Planning Commission (NCPC) sets parking maximums for all federal government buildings in the region. In Arlington County, the maximum is one space per three employees. While these are advisory only outside the District of Columbia they are generally followed in suburban counties such as Arlington.

c. Parking & Transportation Demand Management Conditions

To increase the development potential of a site beyond that amounted permitted as-of-right, the County requires developers to agree to a number of parking and transportation demand management conditions, through the site plan approval process. While these are negotiated on a case-by-case basis, the most common conditions include:

- Market-rate parking charges for single occupant vehicles;
- Unlimited discount-rate parking reserved for carpools and other rideshare vehicles;
- Monitoring of parking demand and traffic generation;
- Provision of short-term public parking (metered) at garage entrances;
- Shared parking; and
- Car-sharing provision.

d. Special Zoning Districts – Columbia Pike District

The County's Columbia Pike District Parking Strategy encourages sharing spaces by setting a limit on the number of reserved parking spaces allowed, while placing no limit on the amount of shared parking allowed on-site for new development. Below are some of the detailed requirements.

- Sites under 20,000 square feet in land area have no minimum parking requirements.
- Sites over 20,000 square feet in land area have the following requirements:
  - A minimum of 1 and 1/8 parking spaces per residential unit, of which a minimum of 1/8 parking space per residential unit shall be provided as SHARED PARKING. There are no maximum limits on shared parking.
  - New on-street parking spaces created in conjunction with the development may be counted toward the minimum requirement for shared parking.
  - A maximum of two spaces per residential unit may be made available as reserved parking. Reserved parking above the maximum may be provided upon payment to the County. The County Manager shall establish the amount of payment annually based on the approximate cost to build structured parking.
  - Up to 100 percent of all required parking may be provided off-site if the said parking spaces are located within a ¼-mile radius of the subject site and a legally binding parking agreement meeting zoning code standards (Section 33.C.3.b.) is provided to the Zoning Administrator.

3. London, UK

Until recently, most of Great Britain had parking policies that were quite similar to typical policies in the United States, with high minimum parking requirements set for all land uses. London, however, was a pioneering city in replacing minimum parking requirements in many areas with maximum standards in the early 1970s. By the 1990s, this shift accelerated. In 1995, for example, the London Borough of Kensington and Chelsea reversed directions: the borough declared that all of its existing off-street parking requirements would henceforth be maximums rather than minimums, without changing any of the numbers.

In 1996, London revised its parking standards and adopted the following maximum standards[11]:

- Central London - 1 space to 10,764 - 16,146 sq ft (1,000 -1,500 sq m);
- Inner London - 1 space to 6458 - 10,764 sq ft (600 - 1,000 sq m); and
- Outer London - 1 space to 3229 - 6458 sq ft (300 - 600 sq m).

In 2001, the shift from minimum to maximum parking standards in the UK was codified as national government planning policy guidance, which local authorities are statutorily bound to follow. National transportation guidelines for local planning now specify that, "plans should state maximum levels of parking for broad classes of development…There should be no minimum standards for development, other than parking for disabled people."[12]

The explicit reasoning set out by the government is to reduce congestion, act as a demand management tool, and allow higher development densities. Local authorities are warned to be cautious in prescribing different parking standards for town centers and peripheral locations, to avoid creating "perverse incentives" for out of center development through the attraction of additional parking.

The standards for England are set out in the table below[13]. The guidance suggests these are baseline standards and calls for regional and local authorities to adopt more rigorous standards where appropriate.

Figure 12: National Maximum Parking Standards for England

Use	National Maximum Parking Standard	Threshold at which standard applies (gross floor space)
Residential	1.5 spaces per dwelling	-
Food retail	1 per 151 sq ft (14 sq m)	10,764 sq ft (1,000 sq m)
Non-food retail	1 per 215 sq ft (20 sq m)	10,764 sq ft (1,000 sq m)
Cinemas, conference facilities	1 per 5 seats	10,764 sq ft (1,000 sq m)
Other leisure	1 per 237 sq ft (22 sq m)	10,764 sq ft (1,000 sq m)
Offices	1 per 323 sq ft (30 sq m)	26,910 sq ft (2,500 sq m)
Colleges/universities	1 per 2 staff plus 1 per 15 students	26,910 sq ft (2,500 sq m)
Stadia	1 per 15 seats	1,500 seats

Source: Department of the Environment, Transport and the Regions (2001).

4. Other Examples

a. Portland, OR – Maximum Parking

Portland, Oregon was one of the first cities in the U.S. to limit the parking supply as a trip reduction strategy by setting a maximum parking space requirement that developers may not

11 Transport for London (www.tfl.gov.uk)
12 Shoup, Donald (2004) The High Cost of Free Parking, p.92
13 Separate standards are to be issued for Scotland and Wales.

exceed. Since 1975, the City of Portland has had a cap of roughly 40,000 parking spaces downtown, which includes existing and new facilities. The effect of this cap was a decrease in the downtown parking ratio from 3.4 long-term parking spaces per 1,000 square feet of office space in 1973 to 1.5 in 1990. The limit, however, did increase to 44,000 in the 1980s and slightly more in the 1990s to adjust for economic growth.

Figure 13 presents the parking maximums for various uses and districts within Portland. City officials credit these limits with helping to increase transit mode split from about 20% in the early 1970s to 48% in the mid-1990s.

Figure 13: Portland Parking Maximums

	DD 2 & 3	DD4	DD 1& 5, UD	RD 5	RD 3 & 4, DD 6	Transit Zone	Rest of Region
Office	0.7	0.8	1.0	1.5	2.0	3.4	4.1
Retail	1.0	1.0	1.0	1.5	12.0	5.1	6.2
Medical centers	1.5	1.5	1.5	1.5	2.0	4.9	5.9
Schools/ colleges	1.0	1.0	1.0	1.5	2.0	0.3*	0.3*
Industrial	0.7	0.7	0.7	0.7	0.7	None	None
Community services	0.25	0.25	0.25	0.25	0.25	Varies	Varies

Key:

- DD = downtown district; UD = university district; RD = river district; * = per students and staff.
- Per 1,000 square feet net building area, unless noted otherwise.
- Source: City of Portland, 2003.

The Portland policy specifies maximums of 0.7 to 1.5 parking spaces per 1,000 square feet, based on type of development and proximity to transit. This compares with typical office developments that provide about 4 parking spaces per 1,000 square feet. In addition, no new parking facilities can be built for existing development, except in the case of major renovation.

An estimate of the emission reduction benefits of the Portland policy found that VMT reduced due to the policy, in 1995, totaled between 50,960 and 92,000 miles per day. This VMT reduction resulted in a drop in fuel consumption of between 2,610 to 4,730 gallons per day, and a greenhouse gas reduction of 2,400 to 4,400 metric tons of carbon equivalent per year. Since the policy has been in effect, the downtown Portland job base has grown significantly.[14]

b. San Diego, CA – Reduced Requirements for Locational and Demographic Factors

The San Diego Municipal Code permits reduced minimum parking requirements for residential, office, retail, institutional, and industrial uses in designated transit areas and for residential uses in designated very low income areas. With respect to residential uses, the minimum parking requirements can be reduced in multiple dwelling unit developments, depending on the number of bedrooms. For example, in a multiple

[14] http://yosemite.epa.gov

dwelling unit development with 2 bedroom units, the basic minimum parking requirement is 2 spaces per dwelling unit; however, in both transit areas and very low income areas this requirement is reduced to 1.75 spaces per dwelling unit.[15]

With respect to nonresidential uses, the reduction in minimum parking requirements for developments in transit varies based on use. However, in general the minimum parking requirement for nonresidential uses in transit areas is about 85% percent of the standard minimum requirement.

c. Seattle, WA – Reduced Requirements for TDM Programs

The Seattle Municipal Code stipulates that for office or manufacturing uses that require 40 or more parking spaces, the minimum parking requirements may be reduced up to 40% by implementing Transportation Demand Management (TDM) programs.[16] These provisions include:

- For every certified carpool space, the total parking requirement may be reduced by 1-9/10 spaces up to a maximum of 40% of the total parking requirement;
- For every certified vanpool purchased or leased by the applicant for employee use, the total parking requirement may be reduced by 6 spaces up to a maximum of 20% of the total parking requirement;
- If transit passes are provided to all employees and transit service is within 800 feet of the development, the total parking requirement may be reduced up to 10%; and
- For every 4 covered bicycle parking spaces provided, the total parking requirement may be reduced by 1 space up to a maximum of 5% of the total parking requirement.

d. Boulder, CO – No Minimum Requirements (Downtown)

The City of Boulder has no minimum parking requirements for non-residential uses within a designated improvement district in its downtown. Developers are allowed to build as much or as little parking as they choose, subject to design standards in the zoning code, and to manage it as they see fit. If they choose to build little or no parking on-site, they can purchase permits for public lots and garages for their employees. As public garage permits cost $213 per quarter ($852 per year), and surface lot permits (for which there is a waiting list) cost $134 per quarter ($536 per year)[17], this is usually a much less expensive strategy than building parking onsite.

Residential minimum parking requirements are also set low, at one space per unit, although these have had little impact since developers have tended to provide two spaces per unit given perceived market demands.

e. Milwaukee, WI – Reduced Minimums

In 1986, Milwaukee enacted zoning policies that greatly reduced minimum parking requirements compared to the rest of the nation. Retail parking ratios were set at two spaces per 1,000 square feet, compared to the Institute for Transportation Engineers standard one space per 300 square feet. Businesses are allowed eight spaces for the first 2,000 square feet and one space per each subsequent 1,000 square feet. In the downtown area, high density housing is the only use with

[15] Driving Urban Environments: Smart Growth Best Practices. Governor's Office of Smart Growth, Maryland.
[16] Ibid.
[17] City of Boulder, www.bouldercolorado.gov

minimum parking requirements, set at a fairly low two spaces per three units. The city encourages structured as opposed to surface lots and requires that 50 percent of ground floor space on structures gets used for retail. In 2002, the city further strengthened these policies by awarding credits to developers building transit-oriented development, on-street parking, and shared parking. For developments near transit, minimum requirements may be reduced up to 15 percent.[18]

[18] "Parking Spaces / Community Places: Finding the Balance Through Smart Growth Solutions", U.S. EPA, 2006.

Chapter 4. Peer Cities Review

I. Introduction

In addition to a review of individual best practices among zoning standards, it is useful to review complete sets of standards and regulations among comparable, "peer" cities that have adopted some of these promising zoning approaches. This is an important means for identifying the relationship between place and practice, and assessing the applicability of individual zoning options to circumstances similar to Raleigh's.

The Peer Cities review summarized below provides the opportunity to review innovative zoning practices within their zoning context, while the fact that they have been implemented in cities similar to Raleigh supports their applicability to local land use, transportation, and regulatory contexts. The cities considered for review were therefore identified based on similarities across a number of points of comparability, including:

- Relative size of population;
- Location; and
- Significant university presence.

Cities considered for potential selection included:

- Greensboro, North Carolina;
- Charlotte, North Carolina;
- Asheville, North Carolina;
- Gainesville, Florida;
- Austin, Texas;
- Madison, Wisconsin; and
- Richmond, Virginia.

Figure 14 provides a summary of parking standards among these peer-candidate cities. A review of each city's full zoning ordinances along with these basic standards was used to identify which cities offered the most promise for both comparability and zoning standard innovation.

Figure 14 - Composite of Parking Standards for Raleigh and Peer Candidate Cities

	Raleigh	Asheville		Austin	Charlotte	Gainesville	Greensboro	Madison	Richmond
Use Type	Minimum	Minimum	Maximum	Minimum	Minimum	Minimum/ Maximum*	Minimum	Minimum	Minimum
Detached Homes (per unit)	1	2	3	2	2	1	2	2	1
Multi-Family (1-Bdrm)	1.5	1	2	1.5	1.5	1	1.25	1.5	1.25
Multi-Family (2-Bdrm)	2	1	2	2	1.5	2	1.5	2	1.5
Office (GSF per required space)	300	350	250	275	300	300	400	300	300
Commercial (GSF per required space)	200	350	200	275	250	250	250	275	300
Other Requirements									
Bicycle Parking Requirements (Y/N)	N	Y		Y	Y	Y	N	N	N
Districts with Reductions (Y/N)	Y	Y		Y	Y	Y	Y	N	Y

* While not listed as a maximum, the minimum standards in Gainesville's schedule of requirements essentially serves as a maximum standard as well, with administrative approval required to build above this level, and additional surfacing or landscaping standards required to build more than 10 spaces or 10% above the minimum requirement – see details below.

From among these cities, the final set of Peer Cities was selected as follows:

- Asheville, North Carolina;
- Charlotte, North Carolina; and
- Gainesville, Florida.

The three cities selected for the Peer City review not only provide examples of comparable locations in which innovative zoning standards have been implemented but, each in fact has one such practice within its standard "schedule of requirements" table. The long-standing tradition of such tables is for a simple listing of minimum parking requirements for vehicle parking spaces. However, in two of the three cities selected, minimum requirements for bicycle parking are listed side by side with the minimums for vehicle parking spaces. The other city's schedule, while focused exclusively on vehicle parking spaces, consists of one column listing minimum requirements and an adjacent column listing a maximum limit on vehicle parking for each use.

The prominent placement of these minimum bicycle and maximum vehicle standards within each city's schedule lends them a measure of importance and indicates that they are a priority equal to minimum vehicle parking requirements. This is also a good indication that the zoning standards for each of these cities has recently been reviewed and updated to address contemporary transportation and land use conditions. These standards, as well as a general review of other key regulations, are reviewed for each Peer City below, beginning with Asheville, North Carolina.

II. Asheville, North Carolina[19]

A. Purpose

Off-street parking, loading, and access standards are established for the following purposes:

- To ensure the proper and uniform development of parking areas throughout the City of Asheville and its extraterritorial jurisdiction.
- To provide for safe and adequate space for the temporary storage of vehicles.
- To relieve traffic congestion on public streets.
- To promote the efficient use of parking areas.
- To ensure the safe ingress and egress of vehicles entering and exiting the public street system.
- To provide for immediate access for fire and emergency services.

B. Off-Street Parking Requirements

A summary of parking requirements for key categories of land use is provided in the table below.

[19] Details extracted from the Code of Ordinances, City of Asheville, North Carolina: 1993.

Figure 15 – Schedule of Parking Requirements: Asheville

Uses	Standards	
	Minimum – 1 Space for Each:	Maximum – 1 Space for Each:
Dwellings: Multi-Family (2 bedrooms or less)	1 unit	0.5 unit
Dwellings: Multi-Family (3 bedrooms or more)	0.5 unit	0.33 unit
Dwellings: Multi-Family (Elderly or Disabled)	2 units	0.5 unit
Dwellings: Single-Family (2 bedrooms or less)	0.66 unit	0.5 unit
Dwellings: Single-Family (3 bedrooms or more)	0.5 unit	0.33 unit
Dwellings: Subsidized, Low-Income	1 unit	0.5 unit
Office	350 sq. ft.	250 sq. ft.
Commercial/ Retail	350 sq. ft.	200 sq. ft.
Restaurants and Bars	3 seats, plus one space per 2 employees on shift of greatest employment	2 seats, plus one space per 2 employees on shift of greatest employment
Theaters and Stadiums	4 seats	3 seats
Hotels	2 guest rooms, plus additional spaces as required for other uses within the hotel/motel	1 guest room, plus additional spaces as required for other uses within the hotel/motel
Child care facilities	2 employees, plus 1 space per 10 children	1 employee, plus 1 space per 10 children
Elementary Schools	0.5 classrooms	0.33 classrooms
High Schools	0.5 classrooms, plus 1 per 5 students for high schools	0.33 classrooms, plus 1 per 5 students for high schools
Colleges and Universities	3 employees, plus one space per 3 full-time students not residing on campus	1 employee, plus one space per each full-time student not residing on campus
Churches and Wedding Chapels	4 seats or 40 SF of movable seating area, or 200 SF of GFA	3 seats or 30 SF of movable seating area, or 150 SF of GFA
Manufacturing	2 employees on shift of greatest employment	1 employee on shift of greatest employment
Warehouses	2 employees on shift of greatest employment, plus one space per 350 sq. ft. of area open to the public	1 employee on shift of greatest employment, plus one space per 350 sq. ft. of area open to the public

C. Other Requirements

1. Bicycle Parking Standards

Bicycle parking must be provided for all uses except single-family and two-family dwellings. The minimum number of bicycle parking spaces required is equal to five percent of the total number of automobile parking spaces in the lot. Bicycle parking facilities must include standard bike racks or other secured, lockable facilities.

2. Exceeding Maximum

The number of parking spaces for a proposed use may exceed the maximum number of spaces permitted only if a pervious paving system is used and provided that the pervious paving system is approved by the planning and development director. When the number of parking spaces exceeds the maximum city parking standards, one tree and two shrubs per 1,000 square feet of the additional vehicular use area is required in addition to the minimum requirements of this subsection.

D. Flexibility

1. Shared Parking

The planning and development director can approve the joint use of up to 100 percent of the required parking spaces for two or more uses located on the same parcel or adjacent parcels; provided that the developer can demonstrate that the uses will not overlap in hours of operation or in demand for the shared spaces.

Any sharing of required parking spaces by uses located on different parcels must be guaranteed by a written agreement between the owner of the parking area and the owner of any use located on a different parcel and served by the parking area.

Should the uses change such that the new uses overlap in hours of operation or in demand for the shared spaces, the shared parking approval will become void and spaces sufficient to meet the standard requirements for each land use must then be provided.

2. Off-Site Parking

If the required number of parking spaces for any land use cannot be reasonably provided on the same lot on which the principal use is located, such parking space may be provided on any land within 500 feet walking distance of the property on which the principal use is located, provided that the zoning use regulations for the district in which the remote parking space is located permit the principal use which the parking spaces serve.

Any remote parking spaces located on a different parcel than the use for which the remote parking spaces serve must be guaranteed by a written agreement between the owner of the remote parking area and the owner of the use located on a different parcel and served by the remote parking area. Change of ownership of either parcel requires a renewal of the agreement.

3. On-Street Parking

On-street parking spaces may be counted toward the fulfillment of the off-street parking requirements for a development, subject to the following standards.

- The on-street parking spaces are newly constructed as part of a development. No existing on-street parking spaces may be counted except as permitted for a particular use district.

- There must be a minimum of four contiguous on-street spaces constructed for the development.
- All counted spaces must be parallel on-street parking spaces unless otherwise approved by the city traffic engineer.
- Parking spaces must be located not more than 500 feet from the proposed development. Parking spaces that are located more than 150 feet from the proposed development must be located within a zoning classification that permits the use served and must not be located adjacent to property that is not within a zoning classification that permits said use.
- Sidewalks must abut all counted on-street parking spaces in such a fashion as to allow direct pedestrian connectivity to the building or development served by the spaces. For the purpose of this section, parking spaces located directly across a street from a building or development may be counted, if a crosswalk (marked or unmarked) is provided for convenient pedestrian access.
- The city traffic engineer must approve the overall design of street modifications (including curbs, sidewalks, paving, and marking locations) associated with any counted on-street parking. Parking must not restrict existing travel lanes unless approved by the city traffic engineer nor may counted parking restrict current or future access to abutting parcels.
- Any on-street spaces created in accordance with this provision must be public parking spaces and not for the exclusive use of the development. Full access easements or rights-of-way incorporating the parking and the abutting sidewalks must be conveyed to the city.

Any on-street parking space meeting these standards will count as 0.75 of a required off-street parking space.

E. Special Districts: Urban Residential Developments

Residential developments located within, or just outside of, the city's main CBD (as described in a street-by-street description within the zoning code) are not required to provide off-street parking if on-street parking is permitted on the street(s) on which the development is proposed and the developer investigates with the Asheville Transit Authority the provision of a transit stop to serve the development.

F. Landscaping Requirements

Parking lots with six or more spaces are required to contain landscaping in order to:

- Provide attractive views from roads and adjacent properties;
- Provide shade to reduce the heat generated by impervious surfaces;
- Reduce glare from parking surfaces; and
- Help filter exhaust from vehicles.

1. Volume

One deciduous tree and four shrubs are required for every 1,500 square feet of vehicular use area (VUA). At least 75 percent of the required deciduous parking lot trees must be large-maturing trees. Trees and shrubs must be planted within 15 feet of the vehicular use area to count as parking lot landscaping.

2. Configuration
When more than four trees are required in a parking lot with interior rows, 50 percent of the trees and shrubs must be planted in islands or medians located within the parking lot.

When more than four bays of parking are proposed, an interior island with an average width of 20 feet and a length equivalent to the length of the average parking bay is required. This island must be planted and include a pedestrian walkway no less than five feet wide and placed in a location that enhances pedestrian circulation, preferably leading directly to a building entrance or sidewalk. The minimum island size is 200 square feet of pervious planting surface per tree. Islands must maintain an average width of ten feet with a minimum width no less than five feet.

All continuous runs of 15 or more parking spaces must be interrupted by a tree island.

Each parking space must be located within 60 feet of a tree as measured from the trunk of the tree to the closest point of the parking space.

3. Structured Parking
Exposed parking decks are required to plant a minimum of one tree and two shrubs for every 30 linear feet of the parking structure's perimeter. Trees must be planted within 20 feet of the structure. This requirement will be waived wherever other zoning standards require a greater number of plantings.

4. Screening
All parking areas required for specified uses must be screened from adjacent properties with a mix of evergreen and deciduous trees and shrubs to result in a vegetative screen that is 75 percent opaque year round.

III. Charlotte, North Carolina

A. Purpose
Off-street parking, loading, and access standards are established for the following purposes:

- To relieve traffic congestion in the streets;
- To minimize any detrimental effects of off-street parking areas on adjacent properties; and
- To ensure the proper and uniform development of parking areas throughout the City of Charlotte.

B. Off-Street Parking Requirements
A summary of minimum and maximum parking requirements for key categories of land use is provided in the table below.

Figure 16 - Schedule of Parking Requirements: Charlotte

Uses	Minimum Required Off-Street Parking Spaces by Use		
	Auto	Long-Term Bicycle	Short-Term Bicycle
Dwellings: Detached	2 per Unit	0	0
Dwellings: Duplex	2 per Unit	0	0
Dwellings: Attached	1.5 per Unit	0	0
Dwellings: Multi-Family	1.5 per Unit	0	2, or 1 per 20 units whichever is more
Multi-Family: Elderly or Disabled	.25 per Unit	0	0
Dwellings: Low Income	1 per Unit	0	0
Offices	1 per 300 SF	2, or 1 per 10,000 SF whichever is more	2, or 1 per 40,000 SF whichever is more
Retail: General	1 per 250 SF	2, or 1 per 12,000 SF whichever is more	5% of Auto Parking
Retail: Over 100,000 SF	1 per 330 SF	2,or 1 per 12,000 SF whichever is more	5% of Auto Parking
Restaurants	1 per 75 SF	2, or 1 per 10,000 SF whichever is more	5% of Auto Parking
Nightclubs, Lounges, Bars	1 per 75 SF	None	5% of Auto Parking
Motion Picture Theatres	1 per 3 Seats	2, or 1 per 12,000 SF whichever is more	5% of Auto Parking
Hotels	1 per Room or Suite, plus 1 space per 4 Seats within Dining Areas, plus 1 space per 250 SF of Meeting Space	1 per 20 Rentable Rooms	0
Child Care Centers	1 per Employee, plus 1 space per 10 Children	2, or 1 per 20 Employees whichever is more	2
Elementary/Middle Schools	1 per Classroom	none	1 space per classroom
High Schools	1 per Classroom, plus 1 space per 5 Students	none	1 space per classroom
Universities/Colleges	1 per 2 Students	2 per Office Building, except for dormitories, above	10% of Auto Parking
Religious Institutions	1 per 4 Seats	none	2% of Auto Parking
Industrial: General	1 per 400 SF	2, or 1 per 40,000 SF whichever is more	1% of Auto Parking
Manufacturers and Warehouses	0.25 per 1,000 SF, plus 1 space per 400 SF for any Accessory Office space	2, or 1 per 40,000 SF whichever is more	1% of Auto Parking

C. Other Requirements

1. Bicycle Parking Standards

Short-Term Bicycle Parking must meet the following standards:

- If twenty (20) or more short-term bicycle spaces are required, then at least 50% of the required short-term bicycle spaces must be covered. Coverage may be provided under roof overhangs or awnings, in bicycle lockers, or within or under other structures.
- Short-term bicycle parking should be located along a major building approach line and clearly visible from the approach. The rack area should be no more than a 30-second walk (120 feet) from the entrance it serves and should preferably be within 50 feet. A rack area should be as close as or closer than the nearest non-handicap car parking space. A rack area should be clearly visible from the entrance it serves. A rack area should be provided near each actively used entrance. In general, multiple buildings should not be served with a combined, distant rack area. It is preferred to place smaller rack areas in locations that are more convenient.
- Lighting in the bicycle parking area must meet Illuminating Engineering Society of North America (IESNA) standards for illumination and uniformity.
- Bicycle parking areas must meet the design specifications in the Charlotte-Mecklenburg Land Development Standards Manual. Other designs and manufacturers may be deemed acceptable by the Plans Review staff.

Long-Term Bicycle Parking is not required if an entire development's gross floor area is 2,500 square feet or less. All other development must meet the following standards:

- All spaces must be fully covered from inclement weather.
- Long-term bicycle parking must be located no more than 500 feet from a primary entrance of the use it is intended to serve. Long-term bicycle parking may consist of indoor parking, racks in covered loading dock areas, racks in garage structures, bicycle lockers or other means which provide coverage to the bicycle. Such parking may be restricted to use only by employees, tenants, residents or others at the discretion of the property owner or management.
- Lighting in the bicycle room, compound or locker area must meet the IESNA-recommended illumination values and uniformity ratios.
- Bicycle parking areas must meet the design specifications provided in the Charlotte-Mecklenburg Land Development Standards Manual (See Appendix A). Other designs and manufacturers may be deemed acceptable by the Plans Review staff.

General Standards for all bicycle parking areas include:

- Bike lockers and racks must be securely anchored to the ground and on a hard surface.
- Each required bicycle parking space must be accessible without moving another bicycle. An aisle at least five (5) feet wide is required between the building wall and the bicycle parking rack to allow room for bicycle maneuvering, unless specified otherwise in the Charlotte- Mecklenburg Land Development Standards Manual. Bicycle parking spaces should provide a clearance of at least four (4) feet on adjacent sidewalks. Bicycle lockers should be situated so there are no obstructions within 5 feet of the entry door(s) of the locker.

- If required bicycle parking is not clearly visible from the entrance to the building, parking structure, transit station, or lot, a sign must be posted at the primary entrances indicating the location of the parking.
- Required bicycle parking spaces must be available for residents, visitors, customers and/or employees of the use.

D. Flexibility

1. Shared Parking

Joint use of up to 50% of required parking spaces may be permitted for two or more uses located on the same parcel or adjacent parcels, provided that the developer can demonstrate that the uses will not substantially overlap in hours of operation or in demand for the shared spaces

Any sharing of required parking spaces by uses located on different parcels must be guaranteed by a legally binding written agreement between the owner of the parking area and the owner of any use located on a different parcel and served by the parking area. The agreement must be reviewed and approved and filed with the Charlotte Department of Transportation.

2. Compact Spaces

In parking lots with 20 or more spaces, no more than 25% of all required parking spaces may be designed and designated for compact cars. Where additional parking spaces are permitted, no more than 40% of the parking spaces may be designed and designated for compact cars.

3. Off-Site Options

Required off-street parking spaces for any use may be located no more than 400 feet from the use they are intended to serve. This standard does not apply to parking spaces for auditoriums, stadiums, assembly halls, gymnasiums and other places of assembly, industrial, wholesaling and manufacturing establishments, and hospitals**.** Development or redevelopment of a site with at least one of the characteristics described below may be considered for a deviation from the 400 foot maximum spacing requirement up to no more than a 1200 foot separation:

- Feature unusual natural features that are being preserved, such as but not limited to, steep slopes, streams or environmentally sensitive areas, tree cluster areas and/or open spaces or landscape elements in excess of the required minimums; or
- Feature an unusual configuration;
- Be located on a spacious and extensively landscaped setting such as those found in a research park; or
- Feature an existing facility that has undergone a change of use resulting in the application of the provisions of the re-use exemption noted below and the opportunity to utilize existing parking areas.

For sites that feature at least one of the above characteristics, as determined by the Planning Director, deviations from the 400 foot maximum spacing requirement up to a 1,200 foot separation may be permitted by the Planning Director, based upon the provision of at least two (2) of the following heightened pedestrian amenities:

- Pedestrian lighting;
- A well-defined pedestrian pathway system including sidewalks of no less than six-feet in width; or

- A circulatory bus system throughout the site.

4. Bicycle Space Swap

When at least 100 auto parking spaces are required for an institutional, office and/ or industrial use, a reduction in required auto parking is permitted when a minimum of five Class II (short-term) bicycle parking spaces are provided. The remaining number of required parking spaces may be reduced by one for each additional Class II bicycle space provided. The remaining number of required parking spaces may also be reduced by 2% for the addition of two showers and four lockers for every 250 employees. The total number of motor vehicular parking spaces can be reduced by no more that 25%.

5. Carpool Space Swap

When at least 100 auto parking spaces are required for an institutional, office, and/ or industrial use, a reduction in required parking is permitted when a minimum of 15% of auto parking spaces are restricted to use by carpools. The remaining number of required parking spaces can be reduced by 2 for each carpool space provided. The owner may restrict use of any or all carpool spaces to employees.

6. Re-Use Development

If the number of parking spaces required cannot be placed on the parcel in accordance with these regulations without the demolition of an existing structure or damage of significant trees on the site or in the public right-of-way to accommodate a parking area, the Planning Director, in consultation with Charlotte Department of Transportation, may authorize up to a 25% reduction in the total number of parking spaces required on the lot.

The Planning Director may issue such an authorization only upon the request of the applicant and only upon determining that the reduction in the number of required parking spaces will not unreasonably increase parking congestion along public streets or in parking areas located on nearby lots. After such authorization is granted, the Applicant can not demolish or remove the existing structure or trees unless the full required amount of off-street parking is provided on the lot.

Use changes or additions may be made to existing buildings and uses that do not meet the minimum requirements for the number of off-street parking spaces if any such use changes or additions do not represent an additional parking requirement of more than 5 off-street parking spaces. If the change of use conditions requires more than 5 additional auto parking spaces, then the bicycle parking requirements will apply**.**

E. Special Districts

The off-street motor vehicular parking requirements of this section do not apply to certain overlay districts, including all Transit Oriented Development districts. However, bicycle parking requirements do apply in these districts with requirements based not on the zoning district, but on the standard schedule table (Figure 16).

1. Transit Oriented Districts

New permitted uses within this zoning district are required to meet the minimum/maximum number of off-street parking spaces as follows:

Figure 17 - Unique Parking Requirements – Transit Oriented Districts

Use	Parking Requirement Standard
Residential	Maximum: 1.6 spaces/ dwelling unit
Office	Maximum: 1 space/ 300 SF
Restaurants/Nightclubs	Minimum: 1 space/ 150 SF; Maximum: 1 space/ 75 SF
Retail	Maximum: 1 space/ 250 SF
All Other Non-Residential Uses	Maximum: standard schedule minimum for same use

2. Transit Supportive Overlay Districts

New permitted uses within this zoning overlay district are required to meet the minimum/maximum number of off-street parking spaces as follows:

Figure 18 - Unique Parking Requirements – Transit Supportive Overlay Districts

Use	Parking Requirement Standard
Residential	Maximum: 2 parking spaces per dwelling unit
Office	Maximum of 1 parking space per 225 SF
Restaurants/ Nightclubs	Minimum: one space/ 125 SF; Maximum: 1 space/ 75 SF
Retail	Maximum: 1 space per 185 SF
All Other Non- Residential Uses	Maximum: standard schedule minimum for same use, plus 25%.

3. Mixed Use Development District

For all uses within a designated Mixed Use Development District (MUDD), the standard schedule of requirements applies — except for the following:

Figure 19 - Unique Parking Requirements – MUDD

Use	Parking Requirement Standard
Residential	1 space/ dwelling unit
Hotel	0.5 space/ room
All Other	1 space/ 600 SF

4. Uptown Mixed Use District

Permitted uses within this district are required to provide new off-street parking according to the following minimum standards:

- Hotels and motels: 0.5 spaces/room
- Dwellings, all types: 1.0 space/unit
- Bed and breakfasts: 2 spaces
- Boarding houses: 2 spaces

New Office and Commercial uses which contain more than 20,000 square feet of gross floor area and are located on lots with a street frontage greater than 40 feet on any single street must provide parking at the rates specified below:

Floor Area	Parking Standard
Up to 200,000	0.5 / 1000 SF
200,001-500,000	0.75 / 1000 SF over 200,000
500,001-800,000	1.0 / 1000 SF over 500,000
Over 800,000	1.25 / 1000 SF over 800,000

Uses not specifically noted do not have any minimum parking requirements.

The parking requirements may be met on-site or off-site at a distance of up to 1,600 feet from the permitted use. Off-site parking to meet the requirements of this section may be provided through a lease having a term of not less than 5 years excluding renewals and need not be located within this district.

No new grade-level or structural parking lots are allowed to have vehicular access directly from or to the Transit Mall except along the Trade Street portion of the Transit Mall and, then, only "right in" and "right out" access on Trade Street are permitted.

F. Landscaping Requirements

In urban zones and suburban commercial zones, trees must be planted so that each parking space is no more than 60 feet from a tree trunk. 75% of the trees planted must be large maturing shade trees.

When a building permit is requested for the renovation of a site previously developed, internal tree planting is still required; however, only 5% of the total impervious cover must be set aside for landscape purposes.

Credit may be given for existing trees and the city has the authority to modify the planting requirements of this subsection to preserve existing trees.

1. Screening

Unless otherwise required by these regulations, except for any detached, duplex, triplex or quadraplex dwelling on a single lot, all off-street parking for more than 10 automotive vehicles or loading area serving a residential or nonresidential use must be screened in accordance with the following:

- Screening or buffer areas must consist of a planted area which is at least 5 feet wide. This area may contain any type screening materials sufficient to separate visually the land uses, provided such materials meet all screening requirements.
- If only a wall or fence is used, then the area devoted to the screen need only be wide enough to accommodate the wall or fence and allow for its maintenance.
- The composition of the screening material and its placement on the lot will be left up to the discretion of the property owner, so long as the purpose and requirements of the screening requirements are satisfied.
- The following list contains specific standards to be used in installing screening:
  - Any fences or walls used for screening must be constructed in a durable fashion of brick, stone, other masonry materials, wood posts and planks or metal or other materials specifically designed as fencing materials or any combination thereof as

may be approved by the Zoning Administrator. Other materials may also be considered through the alternate buffer and screening process as detailed in Section 12.304. No more than 25 percent of the fence surface may be left open and the finished side of the fence must face the abutting property. A chain link fence with plastic, metal or wooden slats may not be used to satisfy the requirements of this section when abutting residential uses and districts, and public streets;

- The maximum height for a wall or fence, which is located along a side yard in a residential district, is 6 feet;
- The maximum height for a wall, fence, or an earth berm, which is located in any required setback in a residential district, is 5 feet, unless it is part of a zero-lot line subdivision, then it may be 6 feet;
- The minimum height for screening will be whatever is sufficient to separate visually the uses, but not less than 4 feet;
- Any earth berm used to meet the requirements of this Section must be a minimum of 4 feet with a maximum slope of 3:1. Berms in excess of 6 feet in height must have a maximum slope of 4:1 as measured from the exterior property line;
- Shrubs used in any screening or landscaping must be evergreen, at least 2 to 2½ feet tall with a minimum spread of 2 feet when planted and no further apart than 5 feet. They must be of a variety and adequately maintained so that an average height of 5 to 6 feet could be expected as normal growth within 4 years of planting. The average expected height may be reduced to 4 feet for screening along public streets. Shrubs and trees must be on the approved plant list; and
- There are other landscaping and tree planting requirements contained in Chapter 21 of the City Code. Nothing in this Section will exempt anyone from complying with those other requirements when they would require a higher level of performance.

Screening requirements do not apply to automotive sales lots.

IV. Gainesville, Florida[20]

A. Purpose

Off-street parking, loading, and access standards are established for the following purposes:

- To provide for the general welfare and convenience of the public utilizing the various uses located within the city by providing for suitable off-street parking facilities;
- To ensure the safe movement of traffic on the public streets;
- To protect adjacent residential and institutional uses from the adverse impacts of vehicular traffic and parking congestion generated by various uses; and
- To establish minimum standards for the development of parking areas.

B. Off-Street Parking Requirements

A summary of minimum parking requirements for key categories of land use is provided in the table below.

[20] Details extracted from Code of Ordinances, City of Gainesville, Florida: 1990.

Figure 20 - Schedule of Parking Requirements: Gainesville

Uses	Required Auto Spaces - Minimum and Maximum	Required Bicycle Spaces - Minimum
Dwellings: Single-Family	1 per Dwelling Unit	0
Dwellings: Duplexes and Townhouses	2 per Dwelling Unit	0
Dwellings: Multi-family (most districts)	1 per Bedroom	10% of required number of vehicle spaces
Dwellings: Multi-family (High Density and Mixed-Use districts)	1 per Bedroom	25% of required number of vehicle spaces
Dwellings: Elderly Housing	1 for each 3 living units	50% of required number of vehicle spaces
Dwellings: Subsidized Housing	1 per Dwelling Unit	10% of required number of vehicle spaces
Office	1 for each 300 SF of GFA or 1 per Employee, whichever is greater	10% of required number of vehicle spaces
Commercial/ Retail: General	1 per 250 SF of floor area	10% of required number of vehicle spaces
Neighborhood Shopping Centers and Community Shopping Centers	Range, based on size: 1 per 250 SF (smaller projects) to 1 per 200 SF of gross leasable area (larger projects) as measured on a sliding scale	10% of required number of vehicle spaces
Furniture and Appliance stores	3, or 1 space per 500 square feet of floor area, whichever is greater	5% of required number of vehicle spaces
Eating and Drinking Establishments	3, plus 1 for each 3 seats of seating capacity where service is provided	10% of required number of vehicle spaces
Movie Theaters	1 for each 3 seats	10% of required number of vehicle spaces
Hotels	5, plus 1 for each guestroom, plus 75% of required spaces for accessory uses	4 spaces
Day Care Centers	1 loading space per every 10 persons of regulated capacity, with a minimum of 4 spaces, plus 1 per every employee at maximum staff level. Adequate space for queuing, loading and unloading must be provided.	1 per every 4 employees
Elementary School	30, plus 2 per Classroom	100% of required number of vehicle spaces

Uses	Required Auto Spaces - Minimum and Maximum	Required Bicycle Spaces - Minimum
Middle School	35, plus 2 per Classroom	200% of required number of vehicle spaces
High School	1 per employee plus 1 per 10 students of design capacity	100% of required number of vehicle spaces
Places of Religious Assembly	1 for each 3 seats, or the amount of parking required for other combined facilities, whichever is greater.	10% of required number of vehicle spaces
Manufacturing and Industrial	1 per 500 SF of floor area	5% of required number of vehicle spaces
Wholesale and Warehousing	3, plus 1 per 1,000 SF of floor area	5% of required number of vehicle spaces

C. Other Requirements

1. Bicycle Parking Standards

All bicycle parking facilities required by this chapter must be located on the same lot or parcel of land as the use for which such facilities are required and as close to the building entrance as possible without interfering with the flow of pedestrian traffic.

Required bicycle parking facilities must be designed, constructed, and maintained in accordance with the following standards:

- Bicycle parking facilities must include provision for the secure storage and locking of bicycles on a hard surface at least seven feet in length.
- All required bicycle parking facilities must be from an approved list of bicycle parking devices maintained by the department of community development.
  - Such approved list will be adopted and amended by resolution of the city commission.
  - Other bicycle parking devices may be used if it can be established to the satisfaction of the building official that they are equivalent to any devices on the approved list in function, quality and construction.
- Fixed objects which are intended to serve as bicycle parking facilities must be clearly labeled as available for bicycle parking.
- If a room or common locker not divided into individual lockers or rack spaces is used, one bicycle space must consist of an area not less than 12 square feet with locking devices.
  - Adequate aisle widths must be provided in rooms or common lockers.
  - Bike racks should be spaced at least 2.5 feet on center.
- Individual locker spaces or racks must be designed so as to provide convenient ramped access to users.

2. Maximum Parking

Upon presentation of evidence that a proposed use has a justifiable need for additional parking spaces above the minimum requirement, in conjunction with development plan approval, the City may allow ten additional spaces or up to ten percent of the required spaces, whichever is greater.

3. Excess Parking

Vehicular parking that exceeds the required amount of spaces by more than ten spaces or more than ten percent, whichever is greater, is termed excess parking. If a proposed development provides excess parking, the following requirements apply:

- Excess parking may be provided in grass or stabilized pervious surface areas where it is determined that:
  - There will be a low frequency of use;
  - The nature of the proposed use is suitable to such parking surfaces; and
  - There is reasonable certainty that grass or pervious parking will not deteriorate the parking environment.
- If excess parking is hard-surfaced, the amount of landscaping materials required for the excess parking spaces must be double the required amount for as-of-right parking quantities.

Excess parking is prohibited in the Transportation Concurrency Exception Areas (TCEA).

4. Transportation Demand Management (TDM) Requirements - TCEA

The City of Gainesville has two designated TCEA districts within which specific transportation improvements are required as part of development approvals. The goals of these districts include urban redevelopment, infill development, transportation choices, desirable urban design, residential and non-residential mixed use, and streetscaping/ landscaping of roadways within the city.21

Developers can choose from a list of requirements that include traffic signals, dedicated turn lanes, bus pass programs for tenants of the development, payments to the regional transit system which will add or increase the frequency of bus service, ride-sharing or van pooling, participation in a TDM program, or provision of shading over sidewalks.

5. Motorcycle Parking

The number of off-street motorcycle parking spaces required is one motorcycle space per 40 required vehicle spaces. Motorcycle spaces are optional when less than 40 vehicle parking spaces are required.

6. Compact Car Spacing

A development which requires 20 or fewer parking spaces may have a maximum of 25% of its total required parking as compact spaces. A development which requires more than 20 parking spaces may have a maximum of 50% of its total required parking as compact spaces.

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[21] Land Developer Participation in Providing for Bus Transit Facilities and Operations, Center for Urban Transportation Research, March 2002

D. Flexibility

1. Shared Parking

Compound Uses (two or more uses on same site). Parking for compound uses are based on the type of uses comprising the compound use. Where the uses comprising the compound use are intended to operate or need the use of parking during the same time period, parking is based on the requirements for each proposed use. Where the uses comprising the compound use do not have overlapping hours of operation or need the use of parking during the same time period, parking is based on the use requiring the greatest number of parking spaces. However, the uses requiring fewer spaces must provide a minimum of 25 percent of total required parking.

Joint Use. The joint use of vehicle parking facilities of more than five spaces by two or more uses is permitted whenever such joint use is practicable and satisfactory to each of the uses intended to be served and when all requirements for location, design and construction can be satisfied. In computing capacities of any joint use, the off-street vehicle parking requirement is the sum of the individual requirements that will occur at the same time, provided that the total of such off-street vehicle parking facilities required for joint or collective use may be reduced during site plan approval in accordance with the following criteria:

(1) That the uses which the joint off-street parking facilities serve do not normally or regularly operate during the same hours of the day or night may be considered; and

(2) Not more than 50 percent of off-street vehicle parking facilities required for theaters, places of religious assembly, bowling alleys, dancehalls and establishments for the sale and consumption of alcoholic beverages, food or refreshments may be supplied by off-street vehicle parking facilities which are provided for other buildings or uses.

A copy of an agreement between joint uses must be filed with the application for a building permit. The agreement must include a guarantee for continued use and maintenance of the parking facility by each party to the joint use.

2. Off-Site Parking

Required off-street vehicle parking areas may be leased (the "leased area") with boundaries clearly delineated in the lease by the owner or operator of the principal structure to be served, provided the owner or operator enters into a written lease agreement, which is subject to the approval of the city attorney, under the following terms and conditions:

- The leased area is within 300 feet of the main entrance of the principal structure measured to the nearest point of the leased area;
- The leased area must be clearly marked with appropriate signage indicating that the area is for the exclusive use of the principal structure, except in the CCD central city district, wherein the leased area may be jointly used with another principal structure provided the uses in such principal structures do not normally or regularly operate during the same hours of the day or night and otherwise comply with the provisions of subsection (f) of this section;
- The leased area must comply with the provisions of article VIII of this chapter, the landscaping section and the design requirements of this chapter;
- The term of the lease for the leased area must be a minimum of three years with a minimum one-year cancellation clause; and

- The lease must expressly provide that the use of the principal structure is expressly contingent upon the parking facilities of the leased area, and if the lease is terminated for any reason the owner or operator of the principal structure must immediately cease operations and terminate the use of the principal structure unless and until additional required off-street parking facilities are provided in accordance with provisions of this article.

3. Bicycle Space Swap

Upon presentation of evidence that a proposed use would be better served by additional bicycle facilities, in conjunction with development plan approval, the City may allow the substitution of bicycle parking facilities, in addition to the minimum number of required bicycle parking facilities, for vehicle parking spaces on a three-for-one basis. The maximum resulting reduction in vehicle parking from the minimum requirement is 15%.

4. Motorcycle Space Swap

In conjunction with development plan approval, the City may allow the substitution of motorcycle spaces, in addition to the minimum number of required motorcycle spaces, for up to 15% of required vehicle parking spaces on a one-for-one basis.

5. Reducing Minimum Vehicle Space Requirements

The City[22] may authorize a reduction in the number of required vehicular parking spaces, if it is determined there will be adequate access to the development by acceptable alternative means and that the reduction will not infringe upon the parking and access available to other properties in the area. In reaching a determination the board or staff will be guided on the following criteria:

- Evidence that patrons and/or employees of the establishment will arrive by a transportation mode other than private vehicles.
- Evidence that there is an adequate number of parking spaces in the vicinity that are available to the general public who will use the development without reducing the spaces available to and used by other establishments.
- Evidence that the proposed use and likely future uses of the development will generate less parking than the minimum requirement of this chapter.
- Provision of convenient pedestrian and bicyclist access to the site based on its location and the development plan.
- Evidence that a reduction in required parking will not result in unauthorized on-street parking or use of parking provided by nearby businesses.
- In the case of the reuse or redevelopment of a site, evidence that a reduction in the parking requirement will enhance the ability to reuse an existing developed site.
- Permitted uses which serve the recurring household needs and personal service requirements of the occupants of nearby residential areas, and which are located in close proximity to a small service area.
- The number of existing parking spaces within 300 feet of the proposed use. Provided, however, the number of required parking spaces not be reduced for the erection, construction or placement of any building on any land.

[22] The Development Review Board or the City Plan Board, through Development Plan Review.

6. Reducing Minimum Bicycle Space Requirements

The City may authorize a reduction in the number of required bicycle parking spaces if requested by an owner/petitioner and if it is determined there will be reason to anticipate a lesser need for bicycle parking upon good cause shown as further provided below. In no instance may the number of required bicycle parking spaces be reduced to less than 50 percent of the requirement. In reaching a determination of reduction in the number of bicycle parking spaces the board or staff will apply the following criteria, as applicable:

- Evidence that there is an adequate number of bicycle parking spaces in the vicinity (within 100 feet of the development) that are available to the general public and that said use will not reduce the spaces available to and used by other establishments.
- Evidence that the proposed use(s) and likely future uses of the development will generate less bicycle parking than is otherwise required by this chapter.
- Evidence that a reduction in required bicycle parking will not result in unauthorized use of pedestrian areas for bicycle parking or in unauthorized use of bicycle parking provided by nearby businesses.
- Evidence that bicycle parking and/or bicycle storage space is available for employees and the general public within a building or structure on the development site. The number of required bicycle parking spaces must not be reduced for the erection, construction or placement of any building on any land.

7. Tandem Parking

When administered as a valet parking service, required off-street parking may be placed in a tandem configuration upon approval by the City. The area used for tandem parking must be clearly designated on a development plan and must meet all landscaping requirements, except that the location of required interior landscaping must be determined at the time of development review. Approval of tandem parking configuration will be based on continued maintenance of the administered parking service. If and when the service is discontinued, the regular off-street parking configuration of aisle and spaces must be reinstituted and the minimum parking spaces required must be provided. When using this option the property owner must demonstrate that private streets, vehicular maneuvering areas, service areas, loading and unloading area, queuing areas and any regular parking space can function efficiently and will not obstruct the efficient flow of traffic, service, utility and vehicles on the site.

E. Special Districts

1. Central City District

Requirements for residential developments within the City's Central City District are limited to one space per dwelling unit or the required spaces as outlined in Figure 20, whichever is fewer.

2. Special Area Plans

Typically located around campus and traditional downtown areas, Special Area Plans often have unique parking requirements, including counting on-street parking toward minimum parking requirements. The majority exempt most or all development from minimum auto parking requirements, while maintaining minimum requirements for bicycle parking.

F. Design Requirements

The choice of the proper location for access facilities (driveways) must involve consideration of the amount of conflict which can be expected both within the parking area and on the abutting

streets. One primary concept which must be followed is to reduce the number of connections to a practical minimum, thus providing fewer locations where conflicts may occur.

Driveways must cross the sidewalk area at the sidewalk grade established by the city engineer.

When the use of any driveway is changed, making any portion or all of a driveway unnecessary, the owner of the abutting property must, at his/her expense, replace all necessary curbs, gutters, sidewalks, and grass areas.

G.Landscaping

All parking lots with two or more rows of interior parking must contain grassed and/or landscaped medians at least eight feet in width unless an alternative landscape plan is approved. Where it is determined by public works that the landscaped median(s) would obstruct the storm drainage, the community development director may approve an alternative.

1. Pervious Surfaces

If approved in site plan review, up to 20 percent of the total required vehicle parking spaces for multifamily dwellings may be provided by stabilized unpaved parking.

Stormwater management facilities must be provided for all vehicle use areas, whether paved or unpaved, at the time of construction unless the owner demonstrates that stormwater management facilities can be expanded to accommodate future required paving and upon recommendation of the public works department.

A violation of the Code of Ordinances occurs if the unpaved parking area deteriorates so that nearby properties, rights-of-way or easements are adversely impacted or if the unpaved parking area has deteriorated so that it may no longer be used for parking. Evidence of deterioration includes but is not limited to:

- The settlement of the unpaved parking area(s) such that drainage patterns are redirected onto off-site properties rather than the intended stormwater management facilities.
- Absence or failed condition of the approved unpaved parking surface.
- Introduction of sediment and debris from the unpaved parking area onto city rights-of-way and easements.

Neighborhood and Community Shopping Centers containing a food store and/or a drugstore anchor, and having 25,000 to 60,000 square feet gross leasable area for the entire center must construct approximately 20% of the total required parking spaces utilizing stabilized unpaved parking.

Community and Regional shopping centers containing a department store or other large anchor, and having more than 60,000 square feet gross leasable area for the entire center must construct approximately 30% of the total required parking spaces utilizing stabilized unpaved parking.

Unpaved spaces must be located on the periphery of any paved parking areas and as far away from the primary structure(s) as practicable. Parking spaces provided pursuant to this subsection must not be used for joint parking by any other use. Additionally, aisles for unpaved parking spaces must be paved and wheel stops must be installed.

V. Summary

Figure 21 - Comparison of Key Parking Standards

Use Type	Minimum Vehicle Spaces				Maximum Vehicle Spaces				Minimum Bicycle Spaces			
	Raleigh	Asheville	Charlotte	Gainesville	Raleigh	Asheville	Charlotte	Gainesville	Raleigh	Asheville	Charlotte	Gainesville
Detached Homes (per Unit)	1	2	2	1	None	3	None	1	None	None	0	0
Multi-Family (per 1-bdrm Unit)	1.5	1	1.5	1 per Bedroom		2		1 per Bedroom		5% of Vehicle Spaces	2, or 1 per 20 Units	10% of Required Vehicle Spaces
Multi-Family (per 2-Bdrm Unit)	2											
Multi-Family (per 3+Bdrm Unit)	2.5 plus 0.5 per bedroom above 3	2				3						
Office	1 per 300 SF GFA	1 per 350 SF GFA	1 per 300 SF GFA	1 per 300 SF GFA		1 per 250 SF GFA		1 per 300 SF GFA			4, or 1.25 per 10,000 SF	10% of Required Vehicle Spaces
Commercial	1 per 200 SF GFA	1 per 350 SF GFA	1 per 250 SF GFA	1 per 250 SF GFA		1 per 250 SF GFA		1 per 250 SF GFA			2, or 1 per 12,000 SF, plus 5% of Auto Spaces	10% of Required Vehicle Spaces
Industrial	1 per 2 Employees plus 1 per Stopped or Stored Truck	1 per 2 Employees	1 per 400 SF	1 per 500 SF of floor area		1 per 1 Employees		1 per 500 SF of floor area			2 , or 1 per 40,000 SF whichever is more, plus 1% of Auto Spaces	5% of Required Vehicle Spaces
Warehouse		1 per 2 Employees		3 , plus 1 per 1,000 SF of floor area		1 per 1 Employees		3 , plus 1 per 1,000 SF of floor area				5% of Required Vehicle Spaces

A. Purpose

Each city outlines the purpose of its zoning regulations and requirements for parking, including the establishment of minimum parking requirements. Following are abbreviated summaries of the stated goals for each:

- Asheville:
  - Proper and uniform development of parking areas
  - Safe and adequate space for parking
  - Relieve traffic congestion on public streets
  - Efficient use of parking areas
  - Safe public street ingress and egress
  - Emergency services access
- Charlotte,:
  - Relieve traffic congestion
  - Minimize detrimental effects on adjacent properties
  - Proper and uniform development of parking areas
- Gainesville:
  - Provide suitable off-street parking facilities to promote public welfare and convenience
  - Safe movement of traffic
  - Protect adjacent uses from the adverse impacts
  - Establish minimum standards for parking areas

Each set of goals contains a reference to traffic relief or maintaining traffic flow, while two specifically identify the protection of adjacent areas or uses as another purpose for their regulations. These are the two most common and historically consistent rationales for implementing zoning regulations in general and minimum off-street parking requirements specifically. A reference to establishing standards for parking areas is also common between all three cities, with two specifically referring to the objective of “proper and uniform” development.

B. Auto Parking Schedule

Residential Uses: Elderly and Low-Income Standards. Specific standards, characterized by reduced minimum automobile parking requirements for elderly and low-income housing, are common among all three Peer Cities. Bicycle parking minimum requirements for these uses vary considerably between the Peer Cities, with Charlotte exempting both from any requirement, Asheville requiring the same ratio of bike spaces-to-auto spaces as for open market housing, and Gainesville requiring the same bike spaces-to-auto spaces ratio as open-market housing for low-income housing, but a higher ratio (50%) for elderly housing.

Residential Uses: Single-Family. Gainesville’s requirement of 1 space per unit mirrors Raleigh’s, a level exactly half that required by both Asheville and Charlotte.

Residential Uses: Multi-Family. Requirements for smaller units among all three are fairly similar to Raleigh's current standards, each requiring between 1 and 2 spaces per unit. For larger dwelling units, however Raleigh and Gainesville again standout from the North Carolina Peer Cities, this time on the high end; Gainesville requires 1 space per bedroom and Raleigh requires slightly less. By comparison, Asheville requires 2 spaces per unit for homes containing 3 or more bedrooms while Charlotte's standard of 1.5 spaces per unit is applied to all multi-family homes regardless of the number of bedrooms.

Non-Residential Uses. Standards for non-residential uses among Peer Cities are generally consistent with Raleigh's with the exception of commercial uses. Minimum requirements for commercial uses in Charlotte and Gainesville (1 per 250SF) are 20% lower than Raleigh's 1 space per 200 SF standard, while Asheville's minimum requirement of 1 per 350 is 43% lower than Raleigh's. Furthermore, the maximum standard for both Asheville and Gainesville of 1 space per 250 SF is 20% lower than the Raleigh minimum.

Figure 22 presents a summary of how basic auto parking standards among the Peer Cities would translate into space requirements for hypothetical development project scenarios in comparison to each other and to Raleigh. As shown, Asheville's standards consistently result in comparatively less required parking than the others'. In contrast, Raleigh's requirements are consistent at or near the high end among these cities under these scenarios.

Figure 22 – Auto Parking Requirements for Hypothetical Project Scenarios

Use	Location	Size	Required Auto Spaces
Multi-Family Residential	Raleigh	50 Units*	105
	Asheville		70
	Charlotte		75
	Gainesville		110
Office	Raleigh	100,000 SF	333
	Asheville		286
	Charlotte		333
	Gainesville		333
Commercial	Raleigh	40,000 SF	200
	Asheville		114
	Charlotte		160
	Gainesville		160

* 10 One-Bedroom; 20 Two-Bedroom; and 20 Three-Bedroom

C. Bicycle Parking Schedule

All three Peer Cities have an advantage similar to Raleigh in terms of weather and climate that support year-round bicycle travel. This is reflected in each city's policies of including bicycle parking as an accessory requirement to development citywide in each city for most uses.

The use of varying formulae for calculating bicycle parking standards, and the fact that most are at least in part based on standards for required auto spaces that also vary between each city (see Figure 21), necessitate a review of hypothetical scenarios to compare which location requires more or less parking. The following table provides a comparative analysis of how the various auto and bicycle parking requirement standards would translate into actual requirements for a sample of basic development scenarios.

Figure 23 - Parking Requirements for Hypothetical Project Scenarios

Use	Location	Size	Required Auto Spaces	Required Bike Spaces
Multi-Family Residential	Raleigh	50 Units*	105	0
	Asheville		70	4
	Charlotte		75	3
	Gainesville		110	11 (ST)
Office	Raleigh	100,000 SF	333	0
	Asheville		286	14
	Charlotte		333	13 (10 LT; 3 ST)
	Gainesville		333	33
Commercial	Raleigh	40,000	200	0
	Asheville		114	6
	Charlotte		160	11 (3 LT; 8 ST)
	Gainesville		160	16

* 10 One-Bedroom Units, 20 Two-Bedroom Units, and 20 Three-Bedroom Units
LT = Long-Term; ST = Short-Term

Figure 23 reveals that Gainesville's standards appear to consistently require more bicycle parking spaces compared to standards in Asheville and Charlotte for the same project. Asheville's bicycle parking standards result in more required bike spaces than Charlotte's for two out of the three scenarios reviewed above, while in the commercial scenario its standards would require little more than half that of Charlotte's — due primarily to the correlation with Asheville's lower auto parking requirements, which ironically reduce the level of bicycle parking required.

In addition to the quantitative review, it is important to consider the qualitative distinction between Long-Term and Short-Term parking spaces identified within the Charlotte schedule of requirements. In both Asheville and Gainesville, it is possible to meet all bicycle parking requirements through Short-Term parking provisions (typically outside racks). By comparison, Charlotte requires some Long-Term parking provision (typically more expensive but also more supportive of commuter needs) for most uses. So even under scenarios in which Charlotte's zoning requires fewer spaces compared to Asheville's or Gainesville's, it may in fact be requiring a greater overall comparative investment in bicycle parking, and may provide more impact and value in supporting commuter mode shifts.

D. Parking Maximums

Two of the three cities reviewed define a standard for maximum as-of-right development of accessory parking for most or all land uses. Asheville's schedule of requirements articulates such a standard for most uses, essentially creating a range of allowable parking space development. This is however a "soft" cap, as building beyond this level merely requires additional surfacing and landscaping investments. Gainesville's minimum parking requirement standards by comparison are maximums — although, again, of the soft variety. The City requires developers to justify and gain official approval for parking built beyond this level, and requires specific surfacing and/or landscaping investments for "excess" parking — built amounts above the standard by more than 10 spaces or more than 10% of the standard, whichever is greater.

E. Flexibility

The three most commonly provided alternatives to meeting minimum parking requirements among the Peer Cities come in the form of:

- Crediting un-conventional space types or arrangements;
- Allowing "swaps" involving building more parking of a specific type in return for a reduced requirement for standard auto spaces; and
- Providing general reductions in the minimum requirements under specific circumstances.

F. Credits

1. Shared Parking

Asheville – Up to 100% of the required parking spaces may consist of spaces shared between two or more uses located on the same parcel or adjacent parcels; provided that the developer can demonstrate that the uses will not overlap in hours of operation or in demand for the shared spaces.

Charlotte – Joint use of up to 50% of required parking spaces may be permitted for two or more uses located on the same parcel or adjacent parcels; provided that the developer can demonstrate that the uses will not substantially overlap in hours of operation or in demand for the shared spaces.

Gainesville – Requirements for jointly-used parking among uses that do not have overlapping hours of operation, or need the use of parking during the same time period, are based on the use requiring the greatest number of parking spaces. Requirements for uses requiring fewer spaces may be reduced up to 75% of the standard requirement.

2. Compact Spaces

Charlotte – In parking lots with 20 or more spaces, up to 25% of all required parking spaces may be designed and designated for compact cars. Up to 40% of all additional parking spaces may be designed and designated for compact cars.

Gainesville – A development which requires 20 or fewer parking spaces may have up to 25% of its total required parking as compact spaces. A development which requires more than 20 parking spaces may have a maximum of 50% of its total required parking as compact spaces.

3. On-Street Parking

Asheville – On-street parking spaces constructed as part of a new development may be counted toward the fulfillment of off-street requirements for uses within 500 feet, provided:

- Sidewalks abut all counted on-street parking spaces in such a fashion as to allow direct pedestrian connectivity to the building or development served by the spaces.
- The city traffic engineer approves the overall design of street modifications associated with any counted on-street parking.
- Any on-street spaces created in accordance with this provision are public parking spaces

Any on-street parking space meeting these standards may count as 0.75 of a required off-street parking space.

4. Tandem Parking

Gainesville – Required off-street parking may be placed in a tandem configuration, when administered as a valet parking service, upon approval by the City. Approval of tandem parking configuration is based on continued maintenance of the administered parking service.

5. Off-Site Parking

Each Peer City provides an option for meeting minimum parking requirements off-site under conditions that prevent projects from accommodating sufficient parking on-site. All require that signed, legal agreements be presented and maintained, and each stipulates the proximate distance to the development within which qualifying off-site facilities must be located, as follows:

- Asheville – 500 feet.
- Charlotte – 400 feet, with exemptions possible for up to 1,200 feet.
- Gainesville – 300 feet.

G. Swaps

1. Bike Spaces

Charlotte – When at least 100 motor vehicular parking spaces are required to serve institutional, office, and/or industrial uses on a parcel, and a minimum of five Class II (short-term) bicycle parking spaces are provided, the remaining number of parking spaces may be reduced by:

- 1 for each additional Class II space provided; and
- A total of 2% for the addition of two showers and four lockers for every 250 employees.

The total number of motor vehicular parking spaces can be reduced by no more that 25%.

Gainesville - The City may allow the substitution of bicycle parking facilities built above the minimum number of required bicycle parking facilities, for vehicle parking spaces on a three-for-one basis. The maximum resulting reduction in vehicle parking from the minimum requirement is 15%. Figure 24below provides a quick construction-cost comparison of bike versus auto parking accommodations, based on Gainesville's regulations. Cost savings possible with Charlotte's 1-for-1 swap option would be even greater.

Figure 24 - Savings of Gainesville's Bike Space Swap Option

Construction Costs of ...	3 Short-Term Bike Spaces*	1 Surface Auto Space*	1 Structured Auto Space*
	$500	$5,000	$15,000

*Rough cost-estimates based on nationwide cost figures maintained by Nelson\Nygaard.

2. Motorcycle Spaces

Gainesville – The City may allow the substitution of motorcycle spaces built above the minimum number of required motorcycle spaces, for up to 15% of required vehicle parking spaces on a one-for-one basis.

3. Carpool Spaces

Charlotte - Where regulations require at least 100 spaces to serve institutional, office, and industrial uses on a parcel, and a minimum of 15% of required parking spaces are dedicated for and restricted to use by carpools, the remaining number of parking spaces can be reduced by 2 for each carpool space provided.

H. Special Districts

Like Raleigh, each Peer City provides special zoning districts as a means of adjusting development requirements in response to unique development contexts, such as transit adjacency, higher population and/or employment densities, mixed-uses, and pedestrian-oriented commercial corridors. Parking requirement adjustments for such districts among the Peer Cities include:

- Possible elimination of all requirements for residential development in or surrounding downtown – Asheville;
- Parking maximums for most uses within transit-oriented and transit-supportive districts – Charlotte;
- Reduced minimum requirements for residential and hotel uses within mixed-use development districts – Charlotte;
- Reduced minimum requirements for office and commercial uses, and elimination of parking requirements for all other uses, within “Uptown” mixed-use district – Charlotte; and
- Reduced minimum requirements for residential developments within the “center city” district – Gainesville.

I. General Reductions

Asheville – Residential developments located within the Urban Residential Development district are not required to provide off-street parking if:

- On-street parking is permitted on the street(s) on which the development is proposed; and
- The developer investigates with the Asheville Transit Authority the provision of a transit stop to serve the development.

Charlotte – Up to a 25% reduction number of parking spaces required for a development may be granted if the number of parking spaces required cannot be placed on the parcel without:

- The demolition of an existing structure; or
- Damage of significant trees on the site or in the public right-of-way.

Gainesville – The City may authorize a reduction in the number of required vehicular parking spaces, if it is determined there will be adequate access to the development by acceptable alternative means and that the reduction will not infringe upon the parking and access available to other properties in the area.

J. Landscaping and Surfacing

1. Purpose

Asheville – Parking lots with six or more spaces are required to contain landscaping in order to:

- Provide attractive views from roads and adjacent properties;
- Provide shade to reduce the heat generated by impervious surfaces;
- Reduce glare from parking surfaces; and
- Help filter exhaust from vehicles.

2. Volume

Asheville – One deciduous tree and four shrubs are required for every 1,500 square feet of vehicular use area (VUA). At least 75 percent of the required deciduous parking lot trees must be large-maturing trees. Trees and shrubs must be planted within 15 feet of the vehicular use area to count as parking lot landscaping.

Exposed parking decks are required to plant a minimum of one tree and two shrubs for every 30 linear feet of the parking structure's perimeter. Trees must be planted within 20 feet of the structure. This requirement will be waived wherever other zoning standards require a greater number of plantings.

Charlotte – In urban zones and suburban commercial zones, parking spaces must be no more than 60 feet from a tree trunk. 75% of required trees must be planted as large-maturing shade trees.

3. Configuration

Asheville – When more than four trees are required in a parking lot with interior rows, 50 percent of the trees and shrubs must be planted in islands or medians located within the parking lot.

When more than four bays of parking are proposed, an interior island with an average width of 20 feet and a length equivalent to the length of the average parking bay is required. This island must be planted and include a pedestrian walkway no less than five feet wide and placed in a location that enhances pedestrian circulation, preferably leading directly to a building entrance or sidewalk. The minimum island size is 200 square feet of pervious planting surface per tree. Islands must maintain an average width of ten feet with a minimum width no less than five feet.

All continuous runs of 15 or more parking spaces must be interrupted by a tree island.

Each parking space must be located within 60 feet of a tree as measured from the trunk of the tree to the closest point of the parking space.

Gainesville – All parking lots with two or more rows of interior parking must contain grassed and/or landscaped medians at least eight feet in width unless an alternative landscape plan is approved. Where it is determined by public works that the landscaped median(s) would obstruct the storm drainage, the community development director may approve an alternative.

4. Screening

Asheville – All parking areas required for specified uses must be screened from adjacent properties with a mix of evergreen and deciduous trees and shrubs to result in a vegetative screen that is 75 percent opaque year round.

Charlotte – Unless otherwise required by these regulations, except for any detached, duplex, triplex or quadra-plex dwelling on a single lot, all off-street parking for more than 10 automotive vehicles or loading area serving a residential or nonresidential use must be screened.

5. Pervious Surfaces

Gainesville – Up to 20 percent of the total required vehicle parking spaces may be provided as stabilized unpaved parking for multi-family dwellings.

Neighborhood and Community Shopping Centers containing a food store and/or a drugstore anchor, and having 25,000 to 60,000 square feet must construct approximately 20 percent of the total required parking spaces utilizing stabilized unpaved parking.

Community and Regional Shopping Centers containing a department store or other large anchor, and having more than 60,000 square feet gross leasable area for the entire center must construct approximately 30 percent of the total required parking spaces utilizing stabilized unpaved parking.

VI. Feedback from Cities

Following our analysis of current zoning regulations among these Peer Cities, the Project Team contacted representatives of each city to solicit feedback on key elements of their requirements and their effects on development and transportation. Following are summaries of what we heard from each.

A. Asheville, NC[23]

The City has not encountered significant issues or drawbacks related to its adoption of maximum parking limits. There has not been little to no resistance put forward by the development community in response, nor has there been a notable development drop-off following the enactment of the limits.

The bicycle parking requirements have been successful. The resulting facilities are said to be well-used, though there has been no formal assessments of any resulting mode shifts. Options for counting on-street spaces, or shared off-street spaces, against minimum parking requirements, however, are said to be little used.

B. Gainesville, FL[24]

City representatives noted that some resistance has been put forward by the development community in response to the adoption of maximum parking requirements – "but our regulations have been maintained." No resulting drop-off in desirable development activity has been noted. While developers have "occasionally" sought to build beyond the maximum level, "they haven't been approved."

Representatives were able to recall just one project that made use of the "tandem" arrangement/ valet service option provided by Gainesville's current code.

Bicycle parking requirements are viewed by City representative as a definite success. Resulting facilities are said to be well-used, "particularly near campus." One particular indirect benefit of the requirements was said to be improved sidewalk conditions for pedestrians resulting from fewer

[23] Details received from Charleen Hall with the City of Asheville Planning and Development Department.
[24] Details received from Susan Niemann with the City of Gainesville Planning & Development Services

bikes being chained to whatever stationary objects can be found. While there may have been some developers that sought to build less than the minimum requirement for bicycle parking, “they haven’t been allowed” to. The option to “swap” bicycle or motorcycle spaces for standard auto spaces is only “occasionally” used outside of campus areas where this option has been more heavily used.

Chapter 5. Stakeholders Roundtables

I. Introduction

On June 11th and 12th, 2008, representatives from the City of Raleigh and Nelson\Nygaard facilitated a series of roundtable discussions with residents and members of the development community to discuss options for improving off-street parking standards within the zoning code.

The following sections provide summaries of the discussions with each group, beginning with the Developers.

A. Stakeholder Roundtable 1: Developers

Wednesday June 11th, 2008, 3:00-5:00 pm
Municipal Building Room 303

The Developers Group meeting began with an introduction of the project and Nelson\Nygaard from Mitchell Silver and Greg Hallam representing the City of Raleigh. Nine members of the development community were in attendance, as well as four people representing the City of Raleigh, and two members of the Consulting Team.

Figure 25 - Developers Group

Name	Affiliation	Phone	E-mail
Mark Senior	City of Raleigh	919-890-3826	mark.senior@ci.raleigh.nc.us
Mitchell Silver	City of Raleigh	919-516-2626	mitchell.silver@ci.raleigh.nc.us
Greg Hallam	City of Raleigh	919-516-2636	greg.hallam@ci.raleigh.nc.us
Eric Hodge	City of Raleigh	919-516-2639	eric.hodge@ci.raleigh.nc.us
Kevin Bridges	Pettiford Realty	919-272-3110	kbridges@pettifordrealty.com
Angela Reincke	Centex	919-760-1129	angela.reincke@centex.com
Brian Purdy	John R. McAdams	919-361-5000	purdy@johnrmcadams.com
Russ Mann	Withers and Ravenel	919-469-3340	rmann@withersravenel.com
Kevin Hamak	John R. McAdams	919-361-5000	hamak@johnrmcadams.com
Ryan Akers	John R. McAdams	919-361-5000	akers@johnmcadams.com
Robert Lancaster	Bree and Associates, Inc.	919-696-3338	robl@breeassociates.com
Ken Thompson	J Davis Architects	919-835-1500	kent@jdavisarchitects.com
Gordon Grubb	Grubb Ventures	919-786-9905	ggrubb@grubbventures.com
Tom Brown	Nelson\Nygaard	212-242-2490	tbrown@nelsonnygaard.com
Amy Pfeiffer	Nelson\Nygaard	212-242-2490	apfeiffer@nelsonnygaard.com

A series of questions was asked of the group to frame the discussion around issues related to the current zoning regulations, how they impact the way developers operate, and to prompt each attendee to forward suggestions for change. Participants included those involved in residential and commercial development, as well as those specializing in mixed-use and “New Urbanist” development. The group represented projects throughout the city limits, within and outside of the I-440 “beltline.”

1. Comments and Observations

Comments and quotes as provided by attendees of each group follow, along with general observations regarding what was heard as provided by Nelson\Nygaard (italics).

a. Current Parking Requirements

Commercial requirements were generally described as too high, while residential minimums were said to be frequently lower than actual demand.

Minimum parking requirements aside, developers often look to research conducted by the Urban Land Institute to help determine the amount of parking necessary for a project.

b. Shared Parking Credits

For years developers have been trying to make strategic use of excess parking capacities for projects to no avail. The City currently has no mechanism to provide credit for spaces shared between tenants or uses. This conflicts with many of the City's stated development goals including the desire for smarter growth, higher densities, and mixed uses.

Mr. Silver's statements that resolving this disconnect was one motivation for the current study were well received.

A recently completed survey of parking inventories near an opportunity site being considered for a project revealed that the parking, built accessory to a mixed Hotel / Class A office space, contained "major excess" of spaces relative to existing demand. City zoning regulations, however, did not provide any feasible or attractive options for taking advantage of this excess to support a new development.

> "The sharing opportunity was incredible."

In particular, mixed-use and urban infill projects suffer most from the inability to get credit for shared parking arrangements.

Current regulations require developers to meet requirements for all accessory uses for hotels individually or cumulatively. This overlooks the reality that, for most of these uses, nearly all demand comes from the internal capture market created by the hotel use.

"I find the excess of parking that is required to be a baffling waste of real estate." That on-street supply doesn't count only makes this worse, especially for New Urbanist style projects that emphasize walking and sidewalk-oriented businesses. On-street parking is not only the primary parking resource for these businesses, but it is also a useful means to buffer sidewalks from traffic and slow down motorists and should be encouraged.

Will lenders buy into shared parking arrangements? Anything that the Raleigh community will buy into – in the form of adopted zoning standards – lenders will buy into. No problem.

Structured parking costs are killing deals where sharing inventories is not an option. Allowing shared-parking credits would encourage deals that make more efficient use of existing, under-utilized parking facilities.

i. Lack of Shared Parking Requirements

A number of participants remarked upon problems related to townhouse community developments, specifically the lack of spaces for visitors.

"In townhouse communities, parking is always an issue." In most of these communities, on-street parking is discouraged, prohibited, or impractical due the proliferation of driveway curb cuts. In many of these townhouse communities it was noted that while garages are included in each townhouse, residents tend to use this space for storage of things other than cars. People tend to take ownership of the curb in front of their home and don't like to see other homeowners cars parked there.

Because of the lot sizes, the question of how and where to accommodate guest parking continues to be an issue with site design.

c. Other Space Credits

Developers of New Urbanist communities stressed the need to have on-street parking count toward meeting minimum requirements, especially for traditional, sidewalk-oriented retail.

One developer noted that the "Downtown Urban Design Guide" supports crediting on-street spaces in this way.

There is a need for allowing more compact spaces to count toward meeting minimums —a need that is steadily increasing with gas costs on the rise.

There was strong interest in having valet programs for certain uses be counted toward meeting minimum parking requirements. This is another route to making shared use of surrounding excess capacities that the City should be encouraging.

d. Potential Zoning Strategies

There was a somewhat neutral response to the idea of instituting parking maximums, though many noted that, depending upon how low the maximums were set, lenders might be even more resistant than developers to accepting limits on parking. Generally speaking, it was assumed that the market should dictate the maximum limits.

"Offer more flexibility."

Unbundling – Residential purchasers balked at paying $15,000 for a second space (first space was free). Price was set at construction cost. This unbundled fee was offered as a means to avoid over-building parking. Space ended up being provided as unassigned visitor parking.

Incentives for Bike Parking – "I would be glad to build a bike parking space rather than a car space."

The bike parking market among potential tenants is limited by the lack of quality bike networks in Raleigh.

Lot Restrictions – Alley and back-loaded parking has been working well and gaining favor among developers, though it does consume a bit more land than front-loaded parking and tends to be more expensive. In general people like this design because they don't want to see people's cars.

e. Other Comments and Concerns

The one-size fits all approach in the current zoning is a concern. Requirements should be more context-specific and context-sensitive.

The problem of front-yard parking was noted. According to participants, up to 40% of yard space can be devoted to parking. This practice often accompanies the re-use of historic single-family homes as multi-unit apartment buildings. The practice of redeveloping single-family homes to multiple occupancy dwellings, common in college towns, was seen as an issue that could not easily be mitigated. These places that at one time had one to two cars per home now had upwards of 5 and 6 cars.

B. Stakeholder Roundtable 2: Residents Group

Wednesday June 11th, 2008, 7:00 – 9:00 pm
Municipal Building Room 303

The Residents Group meeting began with an introduction of the project and Nelson\Nygaard from Greg Hallam representing the City of Raleigh. Six members of the community were in attendance, as well as two people representing the City of Raleigh and two members of the Consulting Team.

Figure 26 - Residents Group

Name	Affiliation	Phone	E-mail
Greg Hallam	City of Raleigh	919-516-2636	greg.hallam@ci.raleigh.nc.us
Eric Hodge	City of Raleigh	919-516-2639	eric.hodge@ci.raleigh.nc.us
Mark Vanderborgh	WCAC	919-357-2454	mvdborgh@yahoo.com
Betsey Kimrey	Resident, Disabilities Advocate	919-853-3991	elkimrey@mindspring.com
Joel Johnston	Resident	919-876-4645	joecyclist@gmail.com
Philip Poe	RCAC	919-832-6777	pwpoe@att.net
Steven Waters	America Walks	919-618-0294	swaters@livingstreets.com
Helen Tart	Resident	919-833-0586	helentart@pobox.com
Tom Brown	Nelson\Nygaard	212-242-2490	tbrown@nelsonnygaard.com
Amy Pfeiffer	Nelson\Nygaard	212-242-2490	apfeiffer@nelsonnygaard.com

Attendees primarily represented neighborhoods within the beltline, and used a variety of modes to commute to jobs throughout the region, including local and regional buses, scooters, bicycles, and personal vehicles.

1. Notes and Observations

a. Spillover

Residents were particularly interested in spillover issues related to neighboring commercial and/or employment-based uses. New entertainment areas have been developed that attract large populations of drivers to neighborhood areas, creating new parking problems.

> "Residential Permit Parking is only as good as its enforcement."

Shared parking strategies that were supposed to relieve on-street pressures on nearby residential streets have failed to draw much parking. Much of this was due to the fact that people tended to not know where to find the parking. The cure to this was using better signage and way finding techniques to direct people to this resource.

The number of people working from home should be expected to rise as gas costs rise. This is going to undermine many shared parking calculations as residents fail to vacate spaces for other daytime users.

While there is plenty of excess evening parking in some areas, owners typically do not want to open these spaces to public parking because of issues associated with liability.

b. Access

There is a need for more handicapped spaces throughout the city, a need that City Administration should expect to grow rapidly as the "boomer" generation is already entering the retirement years.

> "For people with impairments, parking is sometimes the difference between going out and staying in. This population doesn't have the luxury of mobility options that others have."

c. Effect of Minimum Parking Requirements on Housing Costs

Excessive parking requirements make housing more expensive.

> "Any requirement, any built space has to be paid for. I worry about the cost of housing for my kids."

> "I'd rather pay for my own parking if I need it, not someone else's parking."

Parking that is reserved during work hours should have clear signage indicating that anyone can park during evening and weekend hours.

d. Urban Design and Smart Growth

A primary concern regarding the parking standards is support for using urban space more efficiently.

Attractive urban design and being able to walk places are important objectives for zoning.

> "When I have to walk through acres of parking lot, the heat is oppressive and underscores the environmental costs of excessive parking – runoff, heat gain, etc."

Storm water management around big box parking lots needs to be addressed better.

Green parking policies and design standards to create better parking areas in the future should be considered. Trees need to not just be around the edges of parking lots to make walking through them more comfortable.

Make it easier and more enjoyable for people to use walking as a means of getting around the city. As such, City Administration has to consider how various areas currently function, how to improve the existing conditions, and how to better plan for new uses.

There was concern that development patterns and investment were not done in any systematic manner; new developments were not planned in concert with existing land uses, and important quality of life issues were not being addressed. Because the development plans are submitted one at a time there is no real integration of these plans from a neighborhood, city, or regional perspective.

Once-suburban areas have become more urban. This trend will only continue. Transit oriented design along with mixed-use, and high density development are important ways to create a more sustainable urban environment.

e. Transit Support

Nearly all attendees agreed that the City/regional entities have to do more to provide and support transit options as gas prices go up. More and more people will be looking to transit as an alternative to driving commutes.

> "Last year five people were on my (commuter/ express) bus. This year it is filling up with more riders every week."

Chapter 6. Recommendations

I. Introduction

This section presents a summary of recommended revisions to the City of Raleigh, North Carolina's regulation of parking built accessory to development within the city. These recommendations were developed during the course of a multi-task project organized and completed by Nelson\Nygaard in coordination with the City of Raleigh. Major tasks completed include:

- A review of existing regulations related to and covering accessory parking requirements and standards;
- A review of significant existing transportation conditions;
- A review of current emerging and best practices from across the country in zoning regulation of accessory parking;
- A peer review of existing regulations among a set of three comparable cities; and
- A series of roundtable discussions with area developers and residents.

II. Task Review & Preliminary Recommendations

Following is a summary of findings and preliminary recommendations arising from each of these tasks.

A. Existing Regulations

The City's existing regulations contain a number of noteworthy practices that could be expanded or refined as part of the zoning standard revision and update process. Such practices include:

Overlay Districts – The Pedestrian Business, Downtown, and Transit Oriented Development overlay districts represent recognition of unique transportation and modal demand realities within identifiable geographic areas within the city. The reliance upon customized plans for each Pedestrian Business Overlay District (PBOD) and proposed Transit Oriented Development Overlay District (TODOD), represent a high level of flexibility and customization that can be used to right-size parking requirements based on localized conditions.

Contextual Allowances for **Reduced Minimum Requirements**:

- The particular parking standards applied to each overlay district also represent recognition of the benefit of right-sizing parking requirements for development as well as the hazards of over-requiring parking.
- Municipal entities (Zoning Board of Adjustments, City Council) have some discretionary authority to reduce minimum parking requirements for some uses (mostly educational/ institutional).

Maximums – Regulations that establish a maximum limit, as opposed to the traditional setting of minimum space requirements, are currently in effect for residential development in Pedestrian Business Overlay Districts (PBOD) and the Downtown Overlay District.

Minimum Bicycle Parking Requirements – Limited to PBOD and TOD Overlay Districts

Compact Space Credit – Up to 30 percent of required spaces may be provided as compact spaces for specified uses within structured parking facilities with at least 150 spaces.

Pervious Surface Regulations – The City of Raleigh imposes a Stormwater Utility Fee on all developed uses while the State of North Carolina has recently established a law limiting impervious surface coverage of parking areas to 80 percent.

Design Standards – Language contained in the City's Zoning Code and the Streets, Sidewalks, and Driveway Access Handbook indicate awareness of parking's potential impact on pedestrian environments. By requiring or encouraging limits on curb cuts and provision of pedestrian routes through parking facilities, these documents provide a precedent for future regulations designed to support and encourage vibrant sidewalks in and around traditional commercial centers and residential neighborhoods throughout Raleigh.

1. Preliminary Recommendations

Contextual Standards:

- Continue to seek distinct areas within the city for which customized parking requirements, defined within the regulations of an overlay district or otherwise, can support existing travel and development patterns and preferences as well as City land use and transportation objectives.
- Expand options for site- and project-specific Minimum Requirement reductions — through the use of a shared-parking model to demonstrate a project's parking efficiencies for example, or through the use of optional space "swaps" where additional bicycle, carpool, or motorcycle spaces can reduce the requirement for auto spaces for another.

Maximum Standards: Expand maximum parking standards across more uses and zoning districts.

Minimum Bicycle Parking Requirements: Expand minimum bicycle parking requirements across more uses and zoning districts.

Compact Space Allowance: Ease limits and qualifications for crediting compact spaces against minimum parking requirements.

Runoff Mitigation: Expand Impact of Pervious Surface Regulations by including strategies directly within the zoning code, such as reducing minimum parking requirements in return for reduced impervious coverage or increased Stormwater Utility Fee rates.

Expand design standards: Create specific, binding regulations that will result in more pedestrian-friendly parking facilities.

B. Existing Transportation Conditions

The review of existing transportation conditions identified a number of patterns and trends with potential implications for the effort to update Raleigh parking requirements.

1. Development Trends

Developer responses to existing parking standards vary from targeting the minimum standard — or even seeking options for building less — to building well above the minimum standard. There are also indications that some developers may be seeking relief from minimum parking requirements, but are unable to find an appealing option within the current regulations.

2. Transportation Patterns

Distinct tendencies in car ownership and commute patterns are evident within many areas of the city — especially toward the central city areas and around university campuses. Many of these patterns present options for zoning to support modal and travel patterns that support stated City transportation and land use objectives such as: increased population densities; reduced housing costs; and lower rates of single-occupant vehicle commuting.

3. Transit Market

Recent increases in transit services and organization present a number of reasons to anticipate ridership growth and modal shifts from driving. Coordination among the region's many services, including the informational and promotional portal provided by GoTriangle, is a promising development, as are many of the planned investments including shelter and amenity improvements and the Downtown transit center.

Many ridership data are also very promising; with some indicating that the steady accumulation of new riders in recent years may be further accelerating in recent months. While the feasibility of new or expanded service plans almost always hinges upon the viability of funding sources, these ridership trends present a significant opportunity to increase transit's leverage in the competition for transportation investments.

4. Preliminary Recommendations

Expand Maximum Standard Implementation: Development trends indicate some reason for concern regarding over-parking of developments. Historical emphasis among cities in setting zoning standards has resided in defining the appropriate and desirable minimum requirement. Today's transportation realities — including urban and regional traffic congestion, air quality standards, stormwater runoff impacts, a growing demand for dense, walkable urban environments, and increasing concern regarding climate change linked to emissions — however, support a more balanced approach in which regulations attempt to identity an appropriate and desirable maximum standard.

Add Flexibility: New options for reducing minimums should be designed around "trade-offs" in which developers agree to incorporate appropriate and desirable transportation investments (bicycle parking, transit benefits, carpool and/or compact car spaces) within their project in return for minimum requirement relief.

Create Additional Context-Sensitive Options: In areas where lower vehicle ownership rates or higher non-Single-Occupant-Vehicle commute patterns are the norm, requirements should be Right-Sized through the implementation of new overlay districts.

Incentivize Transit Investment: Implement zoning strategies that can support the financial viability and competitiveness of transit services, such as**:**

- Lower minimum requirements or increase allowable parking levels, based on payment into a Transportation Fund from which funds can be extracted solely for transportation and mobility investments such as enhanced transit;

- Lower minimum requirements or increase allowable parking levels, based on commitment to the provision of transit benefits; and
- Lower minimum requirements or increase allowable parking levels, based on the construction of transit shelters and amenities on or near the development site.

C. Best Practices

The review of Best Practices identified a number of emerging and leading practices that provide a useful framework of innovative options as Raleigh seeks to revise and update its zoning standards.

1. Space Requirement Standards

Reduced or "Tailored" Minimums – This is the most common strategy, one already evident within the current Raleigh code (i.e., PBOD, Downtown Overlay, and TODOD districts).

Eliminated Minimum Requirements – This option is steadily gaining increased favor, expanding to more cities and expanding beyond limited areas within cities that have already implemented it to good effect (i.e., San Francisco).

Maximum Requirements – A reversal of the traditional emphasis on regulating against under-parking new development, this strategy is most favored by cities characterized by:

- Dramatic population and/or employment growth – a strong development market can provide more leverage to cities seeking to add regulatory limits on projects;
- Chronic traffic congestion issues – especially when present on a regional scale;
- Environmental Concerns – Air quality; stormwater management issues; climate change; etc.; and/or
- Commitment to Supporting Alternative Modes – Cities with significant transit infrastructure, or that have made or are planning major new transit investments; cities seeking to promote more walkable/bikable communities.

2. Supportive Regulations

In addition to these strategies directly addressing the number of spaces required, additional strategies were identified as supportive of common modern transportation objectives. The more promising of such strategies for Raleigh include:

Fees – Providing a fee alternative to meeting on-site parking requirements is gaining favor in many cities as a means of:

- Reducing the overall number of parking spaces built;
- Reducing the number of parking sites and pedestrian/vehicle conflict points within dense, urban corridors and neighborhoods; and
- Supporting the development of a publicly-controlled, shared parking supply that can be managed as an economic development to support dense, urban districts.

The following are the common characteristics of existing programs:

- A separate fund is established that is reserved for the future provision of publicly accessible parking spaces — or the funding of alternative transportation improvements.

- The program is available within a specified area only, such as a defined downtown zoning district.
- The fee amount is based on the cost of providing structured or below-grade parking – with the fee remaining attractively lower than the alternative cost of providing on-site parking.

Fees are most commonly offered as an "In-Lieu" option to meeting minimum parking requirements. The same fee, however, can easily be offered as an option to allow building above a maximum limit on parking — with the revenue going to fund alternative transportation modes to offset the traffic impact of the added parking.

Crediting Shared Parking – Certain types of development create opportunities for multiple destinations to access the same parking spaces to meet their customers' cumulative demand for parking. This "sharing" of parking can be accomplished in two ways:

- Off-Setting Peaks: Where and when various uses experience parking demand peaks at distinctly off-set times, allowing one destination to accommodate its peak activity period via spaces vacated by another use experiencing a daily demand low point.
- Internal Capture: Where and when various uses are close enough to allow customers to travel between them on foot rather than by car, allowing a single parking action to support multiple trips.

Dense development environments with diverse mixtures of land uses tend to offer significant opportunities for both types of shared parking. Industry standard calculations of such efficiencies — such as contained in the Urban Land Institute's "Shared Parking Model" — can be used to project shared parking efficiencies on a project-by-project basis, and custom-tailor parking standards for projects that construct, or contribute to, such environments.

Additionally, on-street spaces adjacent to a development's property line can be credited toward the development's space requirements.

Encouraging/Requiring Shared Spaces – Sharing parking can also be encouraged by setting a limit on the number of reserved parking spaces allowed, while placing no limit on the amount of shared parking built. Shared spaces can also be required, typically in proportion to reserved parking required. Sample minimum requirements from Arlington County, Virginia:

- A minimum of 1 and 1/8 parking spaces per residential unit, of which a minimum of 1/8 parking space per residential unit shall be provided as Shared Parking.
- New on-street parking spaces created in conjunction with the development may be counted toward the minimum requirement for shared parking.

Unbundling – Most housing arrangements provide tenant parking as part the lease or purchase cost. Unbundling this relationship by requiring that parking be purchased or leased separately reduces housing costs for households that own one or fewer cars, and makes clearer the cost of owning and storing each car. This strategy also increases the direct financial cost of over-building accessory parking for new developments.

Some communities use zoning to require that parking be sold or leased independently from housing units or office space. Another approach is to reduce minimum parking requirements or allow parking beyond maximum thresholds, but only for developments that un-bundle parking. This recognizes that, given a cost-based choice, many residents will reduce their parking demand.

Bicycle Parking – Parking for bikes — along with showering, changing, and locker facilities for non-residential developments — can either be required or encouraged as an alternative to meeting minimum and/or maximum automobile parking requirements.

3. Preliminary Recommendations

Reduce or Eliminate Minimum Parking Requirements: Seek additional opportunities to reduce or eliminate minimum parking requirements in an effort to Right-Size requirements specific to land use and geographic conditions that predictably support reduced auto parking accommodation.

Expand Maximum Standards: Seek opportunities to expand the imposition of maximum standards limiting accessory parking.

Establish an In-Lieu Fee: Create a Transportation Fund into which fees can be placed for investment in transportation systems in return for relief from minimum, and possibly maximum, standards.

Support Efficient Parking: Establish regulations that support the increased efficiency of accessory parking inventories by:

- Crediting shared spaces against minimum parking requirements; and
- Requiring shared spaces accessory to new development where appropriate and desirable.

Unbundle Parking: Add unbundled parking as a requirement for parking that exceeds maximum space limits.

Minimum Bicycle Parking Requirements: Add minimum bicycle parking requirements as a standard requirement for all uses in all districts.

D. Peer Review

Many standards within current zoning codes found among the reviewed peer cities — Asheville, North Carolina; Charlotte, North Carolina; and Gainesville, Florida — are worth consideration in revising and "Right-Sizing" Raleigh's Zoning Codes, including:

Elderly and Low-Income Standards – Specific standards, characterized by reduced minimums for elderly and low-income housing, are common among all three Peer Cities.

Commercial Standards – Standards for most uses among Peer Cities are generally consistent with Raleigh's with the exception of commercial uses. Minimum requirements for commercial uses in Charlotte and Gainesville (1 per 250SF) are 20% lower than Raleigh's 1 space per 200 SF standard, while Asheville's minimum requirement of 1 per 350 is 43% lower than Raleigh's. Furthermore, the maximum standard for both Asheville and Gainesville of 1 space per 250 SF is 20% lower than the Raleigh minimum.

Figure 22 presents a summary of how basic auto parking standards among the Peer Cities would translate into space requirements for hypothetical development project scenarios in comparison to each other and to Raleigh.

Figure 27 – Auto Parking Requirements for Hypothetical Project Scenarios

Use	Location	Size	Required Auto Spaces
Multi-Family Residential	Raleigh	50 Units*	105
	Asheville		70
	Charlotte		75
	Gainesville		110
Office	Raleigh	100,000 SF	333
	Asheville		286
	Charlotte		333
	Gainesville		333
Commercial	Raleigh	40,000 SF	200
	Asheville		114
	Charlotte		160
	Gainesville		160

* 10 One-Bedroom; 20 Two-Bedroom; and 20 Three-Bedroom

Bicycle Parking Requirements – All three Peer Cities have an advantage similar to Raleigh in terms of weather and climate that support year-round bicycle travel. This is reflected in each city's policies of including bicycle parking as an accessory requirement to development citywide for most uses. While requirements for development in Asheville and Gainesville are defined as a ratio of bicycle spaces to auto spaces, Charlotte's code stipulates specific requirements for distinct land uses for both long-term spaces and short-term spaces (see Figure 28).

Figure 28 - Charlotte's Bicycle Parking Schedule

Uses	Minimum Required Bicycle Parking Spaces by Use	
	Long-Term Bicycle	Short-Term Bicycle
Dwellings: Detached	0	0
Dwellings: Duplex	0	0
Dwellings: Attached	0	0
Dwellings: Multi-Family	0	2, or 1 per 20 units whichever is more
Multi-Family: Elderly or Disabled	0	0
Dwellings: Low Income	0	0
Offices	2, or 1 per 10,000 SF whichever is more	2, or 1 per 40,000 SF whichever is more
Retail: General	2, or 1 per 12,000 SF whichever is more	5% of Auto Parking
Retail: Over 100,000 SF	2,or 1 per 12,000 SF whichever is more	5% of Auto Parking
Restaurants	2, or 1 per 10,000 SF whichever is more	5% of Auto Parking
Nightclubs, Lounges, Bars	None	5% of Auto Parking
Motion Picture Theatres	2, or 1 per 12,000 SF whichever is more	5% of Auto Parking

Uses	Minimum Required Bicycle Parking Spaces by Use	
	Long-Term Bicycle	Short-Term Bicycle
Hotels	1 per 20 Rentable Rooms	0
Child Care Centers	2, or 1 per 20 Employees whichever is more	2
Elementary/Middle Schools	none	1 space per classroom
High Schools	none	1 space per classroom
Universities/Colleges	2 per Office Building, except for dormitories, above	10% of Auto Parking
Religious Institutions	none	2% of Auto Parking
Industrial: General	2, or 1 per 40,000 SF whichever is more	1% of Auto Parking
Manufacturers and Warehouses	2, or 1 per 40,000 SF whichever is more	1% of Auto Parking

Parking Maximums –Two of the three cities reviewed define a standard for maximum as-of-right development of accessory parking for most or all land uses. Asheville's schedule of requirements articulates such a standard for most uses, essentially creating a range of allowable parking space development. This is however a "soft" cap, as building beyond this level merely requires additional surfacing and landscaping investments. Gainesville's minimum parking requirement standards by comparison are themselves maximums — although, again, of the soft variety. The City requires developers to justify and gain official approval for parking built beyond this level, and requires specific surfacing and/or landscaping investments for "excess" parking — built amounts above the standard by more than 10 spaces or more than 10% of the standard, whichever is greater.

Like Raleigh, Charlotte has implemented maximums on a more limited scale — in effect only in districts identified as "transit-oriented" or "transit-supportive."

Flexibility –The three most commonly provided alternatives to meeting minimum parking requirements among the Peer Cities come in the form of:

- **Credits –** Counting un-conventional space types — compact, on-street — or arrangements — shared, tandem, off-site—toward the meeting of minimum auto parking requirements.
- **Swaps –** Allowing developers to provide more parking of a specific type — bicycle, motorcycle, carpool — in return for a reduced overall requirement for standard auto spaces, up to a specified maximum reduction level.

Special Districts – Like Raleigh, each Peer City provides special zoning districts as a means of adjusting development requirements in response to unique development contexts. Parking requirement adjustments for such districts among the Peer Cities include:

- Possible elimination of all requirements for residential development in or surrounding downtown – Asheville;
- Parking maximums for most uses within transit-oriented and transit-supportive districts – Charlotte;
- Reduced minimum requirements for residential and hotel uses within mixed-use development districts – Charlotte;
- Reduced minimum requirements for office and commercial uses, and elimination of parking requirements for all other uses, within "Uptown" mixed-use district – Charlotte; and
- Reduced minimum requirements for residential developments within the "center city" district – Gainesville.

Discretionary Reductions – Charlotte – Up to a 25% reduction in the number of parking spaces required for a development may be granted if the number of parking spaces required cannot be placed on the parcel without:

- The demolition of an existing structure; or
- Damage of significant trees on the site or in the public right-of-way.

Gainesville – The City may authorize a reduction in the number of required vehicular parking spaces, if it is determined there will be adequate access to the development by acceptable alternative means and that the reduction will not infringe upon the parking and access available to other properties in the area.

1. Preliminary Recommendations

Elderly and Low-Income Standards: Provide reduced auto parking requirements for Elderly and Low-Income housing.

Reduce Commercial Minimums: Reduce minimum requirements for commercial uses to a level similar to that imposed in Peer Cities.

Expand Minimum Bicycle Parking Requirements: Cover most or all uses and districts.

Expand Maximum Standards: Cover most or all uses and districts.

Support Efficient Space Types and Arrangements: Provide credits against minimum parking requirements for parking space types and arrangements that offer increased parking efficiency in return.

Support Mode-Balanced Parking: Provide space "swap" options to encourage a more desirable modal balance among accessory parking inventories in return for relief from minimum, and possibly maximum, parking standards.

Encourage Transit Investments: Add an option to provide transit stop investments in return for partial relief from minimum requirements and full relief from maximum limits.

Support Infill Development: Add a provision to allow a reduction in minimum requirements for physically constrained sites.

E. Stakeholder Roundtables

1. Feedback

Discussions with developers and residents yielded a number of comments, concerns, and preferences for consideration as zoning standards are revised.

a. Flexibility

Developers are particularly keen on adding more flexibility to the current parking standards. In particular, credits against minimum requirements for spaces that are shared, reserved for compact cars, or located on-street were noted as desirable. Additionally, the cost savings offered by a potential option to swap bicycle spaces for reduced auto space requirements was seen as very attractive.

It was expressed that such flexibility would go a long way toward bringing zoning more in line with stated City transportation and development objectives — primarily by allowing developers to scale their accessory parking inventories in direct response to site and project-specific demand projections and supply opportunities.

b. Minimum Requirements

Developers noted that Commercial requirements were generally too high, while residential minimums are frequently lower than actual demand. This generally does not result in under-parked projects however, as meeting parking demand is generally a marketing necessity that adds more value to the project than the cost. However…

Developers also noted issues specific to Townhouse communities related to visitor parking accommodation. While conditions vary among communities, issues are specific to communities in which:

- The arrangement of driveways and resulting curb cut pattern fails to preserve significant on-street space inventories; and/or
- On-street parking is disallowed through Homeowner Association rules or similar community covenants.

Residents' primary concern regarding revised standards that might result in less accessory parking (such as reduced or flexible minimum parking standards) is the potential generation of parking "spillover" conditions — where vehicles driven to uses within the new development seek spaces on nearby streets as a result of on-site space unavailability or price. Some noted the failure of past developments to live up to shared parking expectations, resulting in spillover.

c. Maximum Limits

Developers were engaged with the potential for added flexibility and relief from minimum requirements.

Residents repeatedly noted frustration over land uses with vast, empty parking lots — especially ones they frequently must walk through or around.

d. Design

Residents noted frustration with the intense heat experienced within large surface lots that lacked appropriate landscaping. They noted that landscaping requirements that could be met through planting solely on the lot's perimeter were inadequate as most of the heat gain is felt in a lot's central areas.

e. Transit Support

Both groups expressed consistent and strong support for increased transit investments.

2. Preliminary Recommendations

Flexibility: Providing a range of options to meet standard minimum auto parking requirements (and potentially maximum auto parking limits) has emerged as a primary strategy for the City of Raleigh's revised zoning standards. Roundtable discussions indicate that the local/regional development community is eager to build more efficient parking supplies that support both project affordability (which often translates into more competitive pricing of space/units in parking-efficient projects) and City transportation and environmental objectives.

Manage Spillover: Spillover mitigation however remains a vital concern among some residents. In spillover-sensitive areas, implementation of, or improvements to, on-street management strategies such as parking meters and Residential Parking Permit programs should be explored. The more effective these strategies are in preserving on-street opportunities for appropriate parking populations (typically residents or commercial customers depending on the location), the less these populations will be inclined to pressure the City for higher parking requirements.

Shared-Space Minimum Requirement: For townhouse communities, revise minimum parking requirements to add an additional requirement for "shared" spaces — perhaps 0.1 spaces per dwelling unit. Allow developers to meet such requirements through the preservation of on-street spaces (including covenants protecting the legality of street parking), or the provision of separated "visitor" parking areas, depending upon the demands and preferences of the housing market for which they are building. This will prevent requirements that result in lost development densities through the provision of extra-long driveways or three-car garages, while maintaining flexibility that can accommodate communities that find on-street parking undesirable as well as developers and communities seeking more efficient accommodation of non-tenant vehicles.

Maximum Limit: Address noted over-parking of development.

Improve Landscaping Requirements: Ensure that shade-bearing landscaping is required to be located within large surface lots.

III. Final Recommendations

The following sections present Final Recommendations for both Parking Requirements (including narrative and tabular descriptions) and Facility Design guidelines and standards.

A. Parking Requirements

1. Schedule of Minimum Requirements

The following table provides a summary comparison of:

- Current minimum parking requirements for the City of Raleigh;
- A general range of comparable requirements from the review Peer Cities; and
- Recommended requirements.

Figure 29 - Existing and Recommended Schedules

Major Use Types	Minimum Parking Requirement (Spaces)	Range of Comparable Peer Requirements (Spaces)	Recommended Requirements (Spaces)
Detached & Duplex Homes	1 per dwelling unit	1 - 2 per dwelling unit	1 per dwelling unit
Multi-Family (1-Bdrm)	1.5 per dwelling unit	1 - 1.5 per dwelling unit	1.5 per dwelling unit
Multi-Family (2-Bdrm)	2 per dwelling unit	1.5 - 2 per dwelling unit	2 per dwelling unit
Multi-Family (3-Bdrm)	2.5 per dwelling unit	1.5 - 3 per dwelling unit	2.5 per dwelling unit
Multi-Family (4 Bdrm)	3 per dwelling unit	1.5 - 4 per dwelling unit (4 Bedroom)	3 per dwelling unit
House of Worship & Related	1 per 8 seats in PAR*	1 per 4 to 1 per 3 seats	1 per 8 seats in PAR*
Daycare	1 per 8 enrollees, plus 1 per employee	1 per 10 enrollees, plus 1 per 2 to 1 employees	1 per 8 enrollees, plus 1 per employee
Elementary School	1 per 5 seats in PAR*	1 per classroom to 30, plus 2 per classroom	1 per classroom
High School	1 per 600 SF of academic space	Varies, none based on SF	1 per 600 SF of academic space
Higher Education - with either more than 10,000 students, or less than 50% of all students housed on campus	1 per 600 SF of academic space, plus 1 per five seats in PAR, plus one per two beds in an on-campus residential facility		
Higher Education - with less than 10,000 students and more than 50% of all students housed on campus	1 per 900 SF of academic space, plus one per two beds in an on-campus residential facility	Varies, none based on SF or beds	According to an Approved Campus Parking Management Plan, or 1 per 900 SF of academic space, plus one per two beds in an on-campus residential facility
Office	1 per 300 GSF	1 per 350 GSF to 1 per 300 GSF	1 per 300 GSF
General Commercial	1 per 200 GSF	1 per 350 GSF to 1 per 250 GSF	1 per 300 GSF
Bar, Nightclub, Tavern, Lounge	1 per 50 GSF dedicated for public use, or 1 per 4 seats whichever is greater		
Restaurant	1 per 50 GSF or 1 per 4 seats whichever is greater, but no less than 12 spaces	3, plus 1 per 2 employees; 3, plus 1 per 3 seats; 1 per 75 GSF	1 per 75 GSF
Hotel	1 per rooming/ lodging unit	1 per 2 guestrooms to 5, plus 1 per room	1 per rooming/ lodging unit
Shopping Center	1 per 200 to 250 GSF	1 per 330 GSF to 1 per 200 GSF	1 per 330 GSF
Theater	1 per 5 seats or 1 per 5 persons of maximum occupancy capacity, whichever is greater	1 per 4 to 1 per 3 seats	1 per 5 seats or 1 per 5 persons of maximum occupancy capacity, whichever is greater
Industrial/ Manufacturing/ Warehouse	1 per two employees and 1 per truck to be stored or stopped simultaneously	1 per 2 employees; 1 per 400 GSF; 3, plus 1 per 1,000 GSF	1 per 500 GSF
Open Air Markets	1 per 200 GSF of any buildings plus 1 per 200 SF of open display area	1 per 800 GSF to 1 per 200 GSF**	1 per 300 GSF of any buildings plus 1 per 300 SF of open display area

* Principle Assembly Room

** None of the Peer Cities articulate a parking requirement for such a use. Cited requirements are from St. Clair, MI and Burglington, VT respectively.

2. Other Requirements

a. Create an Appropriately Low Minimum Requirement for Elderly and Low-Income Housing

Require no more than one-half of a space (0.5) per unit for Elderly Housing uses.
Require no more than one (1) space per dwelling unit for Low-Income Housing uses.

b. Expand Maximums

Set a default maximum standard for all uses in all districts at 125% of the minimum standard — or, more simply, 125% of the number of spaces resulting from the minimum standard. This follows the example of Gainesville, which uses one standard as both the minimum and maximum while providing two levels of discretionary relief involving City approval for up to 10% beyond the minimum and increased landscaping commitments for building higher. The recommended option for Raleigh, however builds in a 25% buffer for parking beyond the minimum standard "as-of-right."

This leaves open the option of setting distinct maximum standards, or removing them altogether, for specific uses, or within specific districts. However, the recommended forms of added flexibility that will provide a variety of options for developers seeking relief from maximum limits allows the City to take a broad overall approach to setting maximums rather than devising specific limits for each use and context.

c. Add Bicycle Parking Requirements

Implement minimum bicycle parking requirements for all uses and all districts based on one of the options described below.

Two recommendable options for adding standard minimum requirements for bicycle parking are:

A flat requirement for all uses based on a ratio of bicycle spaces required to vehicle spaces built. This offers the advantage of simplicity as well as a built-in expansion of bicycle parking for projects parked above the minimum in auto spaces. There are however some disadvantages to this approach, including:

- Volumes of bicycle parking built will drop precisely where demand may be highest – downtown, mixed-use, and transit-oriented districts with reduced or eliminated minimum requirements; and
- Unique opportunities to match bicycle parking requirements to land use characteristics and context's that might influence the market for such spaces will be missed. Elementary schools or all uses within a university neighborhood area just two examples of high-bicycle parking demand opportunities that might be under-supported by this form of standard.

It is also useful to make distinctions in requiring suitable types of bicycle parking for either commuter-oriented, resident-oriented, or visitor/ shopper-oriented parking demand — whether referred to as "indoor or outdoor", "long-term or short-term", or "Class I or Class II".

A preferable option therefore would be to devise a distinct schedule of minimum requirements for bicycle parking, as Charlotte has done, based on unique land use and contextual characteristics and opportunities. Like Charlotte, it would also be

recommendable to include separate recommendations for long-term and short-term — or “Class A” and “Class B” or “Class I” and “Class II.”

Examples of design and location standards to coincide with these requirements are provided in Appendix A.

Figure 30 - Short- and Long-Term Bicycle Parking

Photo: Michael King, Nelson\Nygaard

Photo: Transportation Alternatives

Another example of this type of schedule is provided in Figure 31, from Portland, Oregon.

Figure 31 – Portland's Bicycle Parking Requirements

Table 266-6
Minimum Required Bicycle Parking Spaces

Use Categories	Specific Uses	Long-term Spaces	Short-term Spaces
Residential Categories			
Household Living	Multi-dwelling	1 per 4 units	2, or 1 per 20 units
Group Living		2, or 1 per 20 residents	None
	Dormitory	1 per 8 residents	None
Commercial Categories			
Retail Sales And Service		2, or 1 per 12,000 sq. ft. of net building area	2, or 1 per 5,000 sq. ft. of net building area
	Temporary Lodging	2, or 1 per 20 rentable rooms	2, or 1 per 20 rentable rooms
Office		2, or 1 per 10,000 sq. ft. of net building area	2, or 1 per 40,000 sq. ft. of net building area
Commercial Parking		10, or 1 per 20 auto spaces	None
Commercial Outdoor Recreation		10, or 1 per 20 auto spaces	None
Major Event Entertainment		10, or 1 per 40 seats or per CU review	None
Industrial Categories			
Manufacturing And Production		2, or 1 per 15,000 sq. ft. of net building area	None
Warehouse And Freight Movement		2, or 1 per 40,000 sq. ft. of net building area	None
Institutional Categories			
Basic Utilities	Light rail stations, transit centers	8	None
Community Service		2, or 1 per 10,000 sq. ft. of net building area	2, or 1 per10,000 sq. ft. of net building area
	Park and ride	10, or 5 per acre	None
Parks And Open Areas		Per CU review	Per CU review
Schools	Grades 2 through 5	2 per classroom, or per CU or IMP review	None
	Grades 6 through 12	4 per classroom, or per CU or IMP review	None
Colleges	Excluding dormitories (see Group Living, above)	2, or 1 per 20,000 sq. ft. of net building area, or per CU or IMP review	2, or 1 per 10,000 sq. ft. of net building area, or per CU or IMP review
Medical Centers		2, or 1 per 70,000 sq. ft. of net building area, or per CU or IMP review	2, or 1 per 40,000 sq. ft. of net building area, or per CU or IMP review
Religious Institutions		2, or 1 per 4,000 sq. ft. of net building area	2, or 1 per 2,000 sq. ft. of net building area
Daycare		2, or 1 per 10,000 sq. ft. of net building area	None
Other Categories			
Aviation And Surface Passenger Terminals, Detention Facilities		Per CU Review	Per CU Review

Note: Wherever this table indicates two numerical standards, such as "2, or 1 per 3,000 sq. ft. of net building area," the larger number applies.

d. Add Motorcycle Parking Requirements

Require that 2%, or a minimum of 2 spaces, of the minimum number of automobile parking spaces be provided as motorcycle/ scooter parking for most or all uses.

e. Add Shared Parking Requirement

Require that "Attached Townhouse" developments provide 0.1 shared spaces per dwelling unit in addition to the base requirement for standard spaces. Allow shared spaces to be provided either as on-street parking (protected through covenants against future encroachment) or within a separate, marked parking area.

> Example — Arlington County's "Columbia Pike Form-Based Code":
>
> *"Sites over 20,000 square feet in land area have the following requirements.*
>
> *A minimum of 1 and 1/8 parking spaces per residential unit, of which a minimum of 1/8 parking space per residential unit shall be provided as SHARED PARKING. There are no maximum limits on SHARED PARKING."*[25]

3. Supportive Strategies

The most significant recommendation for the City of Raleigh to update its schedule is to make it a much more flexible one that is responsive to developers' sense of the Right-Size of parking for their projects, while:

- Maintaining a reasonable range of allowable results; and
- Exchanging commitments to multi-modal investments from developers seeking to park their projects above or below these standards.

This not only provides developers with more flexibility, but allows the City to gain desirable non-SOV mobility investments from the developers; investments that would likely not be included in the project under a more fixed schedule of standards.

a. Flexibility

i. Credit Compact Spaces

Allow up to 30 percent of all required parking spaces to be provided as compact spaces, provided that such spaces are constructed in a priority location as compared to standard spaces (closer to the main building entrance) and are priced at a discount compared to standard spaces in circumstances where spaces are leased to tenants.

ii. Credit On-Street Spaces

In order to support the developer interest in constructing "New Urbanist" districts in Raleigh, distinguishable by, among other things, a retail orientation toward streets and sidewalks rather than front-loaded parking lots, adopt a provision for counting on-street spaces that is similar to that in place in Asheville:

> *On-street parking spaces constructed (as part of newly constructed public streets) as part of a new development may be counted toward the fulfillment of off-street requirements for uses within 500 feet, provided:*
>
> - *Sidewalks abut all counted on-street parking spaces in such a fashion as to allow direct pedestrian connectivity to the building or development served by the spaces.*

[25] "Columbia Pike Special Revitalization District – Form Based Code", Arlington County Regulating Plan, 2005.

- *The city traffic engineer approves the overall design of street modifications associated with any counted on-street parking.*
- *Any on-street spaces created in accordance with this provision are public parking spaces.*

Any on-street parking space meeting these standards may count as 0.75 of a required off-street parking space.

Figure 32 - On-Street Parking Serving New Urban Development[26]

Graphic: Ayers/Saint/Gross Photo: Looney Ricks Kiss Architects & RTKL

iii. Credit Shared Spaces

There are two recommendable options for providing simpler and more predictable processes for attaining shared parking credits.

Utilize Standard Flexible Model – Adopt a standard model for calculating shared-parking efficiencies. The recommended option would be the Urban Land Institute's (ULI) "Shared Parking Model"[27] — a spreadsheet that estimates the shared parking demand in mixed-use projects. This model can be used to estimate cumulative shared parking demand at new, mixed-use projects, or to measure the capacity of existing accessory parking inventories to absorb demand generated by (and therefore reduce the need for fully meeting minimum requirements among) new, proximate uses. Zoning language should be added to establish such a model as a recognized mechanism for demonstrating shared-parking efficiencies associated with proposed projects, and allowing for administrative acceptance of resulting, confirmed calculations to serve as a standard for the parking requirements attached to the project.

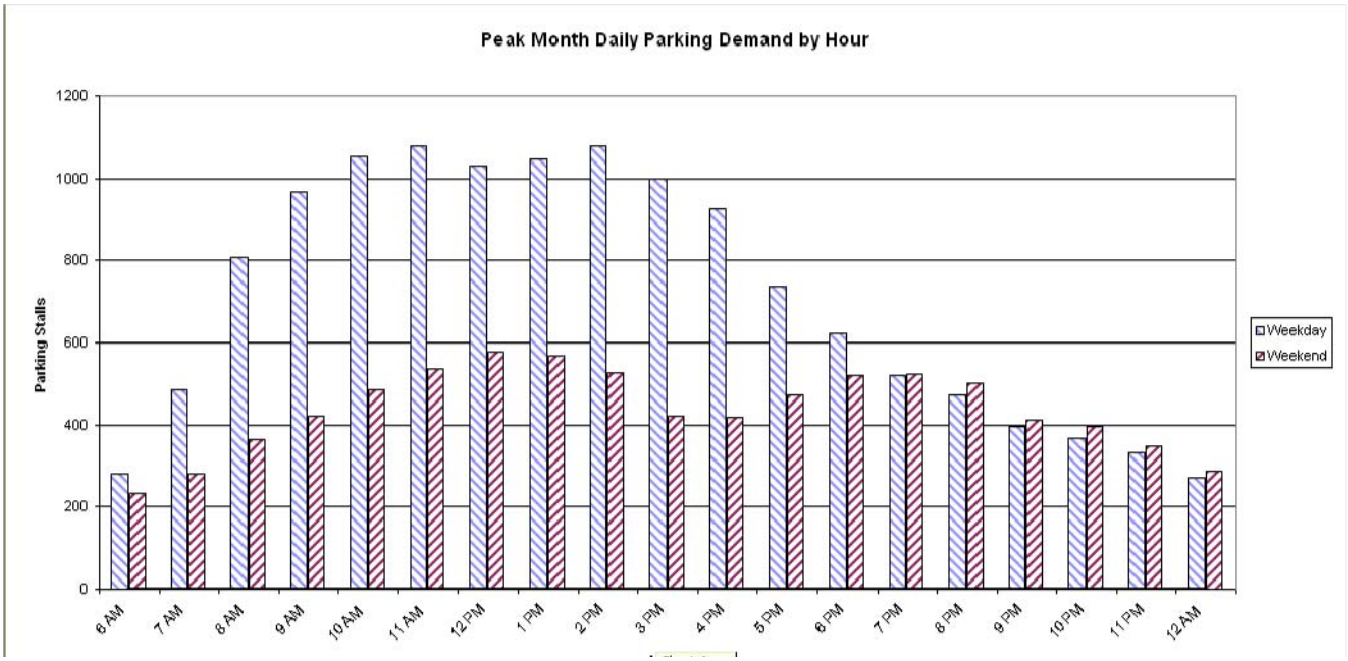
Figure 33 below presents the results of a simulated shared-parking calculation as created by the ULI Shared Parking Model. For any project, use types and their respective square footage can be entered into the Microsoft Excel-based model. The model will then provide hourly, daily, and monthly parking demand peaks calculations for all uses that incorporate the inherent efficiencies offered by the particular mix of uses

[26] http://www.cnu.org/search/imagebank
[27] www.uli.org/bookstore. User Manual provided within the Appendix to this report.

entered. Figure 7 presents results for hourly demand calculations for the estimated peak annual month for a hypothetical project consisting of:

- 200,000 GSF of Office space;
- 15,000 SF of Family Dining space;
- 10,000 SF of Fast Food space;
- 5,000 SF of Health Club space;
- A 200-room Hotel; and
- A 500-seat Movieplex.

Figure 33 – Hypothetical ULI Shared Parking Model Calculation



Graphic: Urban Land Institute

Figure 33 represents hourly peaks for weekdays (blue stripes) and weekends (red stripes) during the month with the highest estimate annual demand – June for this example. As shown, the model calculates the highest cumulative parking demand during the peak month to occur between 11 AM and 2 PM during weekdays, where demand will reach approximately 1,080 parking spaces. The parking requirement, based on current standards, for these uses individually would be about 1,490[28]. Using the ULI calculation

[28] 500 spaces for dining based on the 1 space per 50 GSF standard; 100 spaces for the theater based on 1 space per 5 seats; 25 spaces for the health club based on 1 space per 200 SF; 200 spaces for the hotel based on 1 space per room; and 666 spaces for the office space based on 1 space per 300 SF.

as the minimum requirement for this project would net a reduction of over 400 space or 28%. A full user's manual covering the ULI model is provided as Appendix B to this report.

Adopt a Fixed Model - Adopt a basic formula that can be applied as of right, based on major land use components of mixed-use districts and projects. An example from New Orleans is provided here:

> *"Up to fifty (50) percent of the parking spaces required for (a) theaters, public auditoriums, bowling alleys, dance halls, and nightclubs, and up to 100 percent of the parking spaces required for a church auditorium may be provided and used jointly by (b) banks, offices, retail stores, repair shops, service establishments, and similar uses not normally open, used, or operated during the same hours as those uses listed in (a). Up to 100 percent of parking spaces required for schools may be provided and used jointly by a church auditorium. Such joint use is authorized, provided that written agreement thereto is properly executed and recorded as specified…"*[29]

An example of a standard, official space sharing agreement between property owners is provided as Appendix C.

iv. Credit Tandem Parking

Allow off-street parking to be placed in a tandem configuration, when administered as a valet parking service, upon approval by the City. Make approval of tandem parking configuration contingent upon continued maintenance of the administered parking service.

> Example — Gainesville[30]:
>
> "*Tandem parking. When administered as a valet parking service, required off-street parking may be placed in a tandem configuration upon approval by the development review board, the plan board, or the city manager or designee where development plan review before the plan board or development review board is not required. The area used for tandem parking must be clearly designated on a development plan and must meet all landscaping requirements, except that the location of required interior landscaping shall be determined at the time of development review. Approval of tandem parking configuration shall be based on continued maintenance of the administered parking service. If and when the service is discontinued, the regular off-street parking configuration of aisle and spaces shall be reinstituted and the minimum parking spaces required shall be provided in accordance with (zoning). When using this option the property owner must demonstrate that private streets, vehicular maneuvering areas, service areas, loading and unloading area, queuing areas and any regular parking space can function efficiently and will not obstruct the efficient flow of traffic, service, utility and vehicles on the site*."

b. Allow Space Swaps

[29] Code of Ordinances, City of New Orleans, Louisiana, 1996.
[30] Code of Ordinances, City of Gainesville, Florida: 1990

To encourage a desirable balance of modal accommodation within accessory parking facilities, while also providing an acceptable level of development-supportive regulatory flexibility, provide options for developers to substitute spaces designed or reserved other than single-occupant automobiles — such as bicycles, motorcycles, and rideshare vehicles (carpools and vanpools). In all cases, existing parking may be converted to take advantage of these options.

i. Bicycles

Allow the substitution of bicycle spaces for up to 10% of required auto spaces where:

- For every one (1) non-required long-term bicycle space and/or every three (3) short-term bicycle spaces provided, the motor vehicle parking requirement is reduced by one (1); and
- The provision of one shower and two lockers per gender for every 50,000 SF of non-residential GFA can be included for an additional 5% reduction in required motor vehicle spaces.
  - The qualifying facility must include showers, a dressing area, and lockers;
  - All tenants of the building must be able to use the locker room facility; and
  - At least 110 percent of any required long-term bicycle parking for the site must be provided and meet applicable standards.

ii. Carpool Spaces

Allow the substitution of spaces reserved for rideshare vehicles for up to 10% of required auto spaces where:

- For every one (1) non-required carpool space provided, the motor vehicle parking requirement is reduced by two (2) spaces;
- Regulations require at least 100 spaces, for every one (1) non-required vanpool space provided, the motor vehicle parking requirement is reduced by four (4) spaces; and
- Such spaces are located in a priority location as compared to standard spaces (closer to the main building entrance) and are priced at a discount compared to standard spaces in circumstances where spaces are leased to tenants.

Owners or operators of facilities with such spaces must sign an affidavit attesting to their commitment to maintain these spaces as reserved for their intended purpose. Such commitments must extend for the life of the building. While this is not a foolproof enforcement solution, the legal status of such spaces does give carpool commuters leverage to gain preferential access to such spaces compared to single-occupant vehicle commuters.

iii. Motorcycles

Allow the substitution of motorcycle spaces provided above any minimum requirement for such spaces for up to 10% of required auto spaces where:

- For every one (1) non-required motorcycle space provided the motor vehicle parking requirement is reduced by one (1).

  Example — Charlotte:

  *"**Section 12.209 Allowable reductions and restrictions of parking.***

> *When at least one hundred (100) motor vehicular parking spaces are required in Table 12.202 to serve institutional, office and industrial uses on a parcel, a reduction in required parking is permitted provided a minimum of five (5) Class II (short-term) bicycle parking spaces are provided. The remaining number of parking spaces may be reduced by one (1) for each additional Class II (short-term) bicycle parking space provided. The remaining number of parking spaces may also be reduced by 2% for the addition of two showers and four lockers for every 250 employees. The number of motor vehicular parking spaces shall be reduced by no more that 25%."*[31]

c. Fees and other Trade-Offs

Recommended forms of trade-offs for parking standard flexibility include:

i. Fees

Institute and maintain (with periodic updates) a standard Transportation Fund fee to be assessed in lieu of each required space not built The Transportation Fund should be established as dedicated source of investment dollars for transportation improvements, including, but not limited to:

- Public parking where supplies are constrained;
- Streetscapes for enhanced pedestrian mobility; and
- Investments in other "alternative mode" enhancements such as bike racks or transit.

Such investments will provide the City with an additional tool with which it can manage transportation impacts of new development. Investments can respond to under-parked areas by providing public garages or supporting alternative modes.

ii. Transit Investments

For sites where at least one street lot line abuts a fixed-route public transit service, allow developers to negotiate with local or regional public transit service providers to provide shelters and/or stop amenities (benches, lighting, signage and wayfinding, etc.) on-site or within 500 feet of the proposed project's main entrance in return for a reduction in minimum motor vehicle parking requirements of up to 10%. By giving final sign-off to a beneficiary transit service, the City would allow this option to remain flexible and responsive to changing needs and circumstances that will affect what provision are more or less valuable at the time of project planning.

> Example — Asheville[32]:
>
> *Residential developments located within the Urban Residential Development district are not required to provide off-street parking if:*

[31] City of Charlotte Zoning Ordinance, 1992.
[32] Code of Ordinances, City of Asheville, North Carolina: 1993.

- *On-street parking is permitted on the street(s) on which the development is proposed; and*
- *The developer investigates with the Asheville Transit Authority the provision of a transit stop to serve the development.*

An alternate option would be for the City to work with local service providers to draft a basic set of recommendations to be directly included in the zoning code, specifying what must be constructed and how to qualify for parking standard relief. While sacrificing the flexibility and responsiveness of the first option, this option offers more simplicity and predictability for interested developers.

Example — Portland:

Sites where at least 20 parking spaces are required, and where at least one street lot line abuts a transit street may substitute transit-supportive plazas for required parking, as follows. Transit-supportive plazas may be substituted for up to 10 percent of the required parking spaces on the site.

The plaza must be:

- *Adjacent to and visible from the transit street;*
- *Adjacent to a bus stop if there is a bus stop along the site's frontage;*
- *At least 300 square feet in area; and*
- *Shaped so that a 10'x10' square will fit entirely in the plaza.*

The plaza must include:

- *A public access easement that allows public access to the plaza;*
- *A bench or other sitting area with at least 5 linear feet of seating; and*
- *A shelter or other weather protection.*

At least 10 percent, but not more than 25 percent of the transit-supportive plaza must be landscaped. This landscaping is in addition to any other landscaping or screening required for parking areas by the Zoning Code.

iii. Environment

Allow developers to contribute to the City's Stormwater Utility Fee, or invest in its own on-site stormwater management systems, above and beyond what is otherwise required in exchange for up to 10% relief from minimum parking requirements or unlimited relief from maximum parking limits.

Examples:

For both Asheville and Gainesville, the provision of landscaping and/or permeable surface investments beyond what is otherwise required is the primary option for building above maximum space standards.

d. Discretionary Exceptions – Infill Development

To support preservation of architectural and natural resources, as well as to avoid regulatory barriers to re-use and infill development, the City of Raleigh should adopt language exempting projects from fully meeting minimum parking requirements where to do so would require the destruction of existing structures or trees, similar to that currently in place in Charlotte:

> *Up to a 25% reduction in the number of parking spaces required for a development may be granted if the number of parking spaces required cannot be placed on the parcel without:*
>
> - *The demolition of an existing structure; or*
> - *Damage of significant trees on the site or in the public right-of-way.*

e. Flexible Standards for Universities

Campus-based higher education uses can create tremendous land use efficiencies through comprehensive transportation and parking demand management strategies such as transit services and pass programs, parking permitting and pricing, on-site housing investments, etc. Zoning should not only allow such uses to utilize these opportunities to reduce their parking requirements, it should encourage this.

For a college or university use, encourage the development of a campus plan for any new development of over 50,000 SF. Once such a plan has been approved by the Planning Commission or the City Council for the college or university, parking shall be provided as set forth in the approved campus plan.

B. Facility Design Standards

Recommendations for revised or new zoning standards for parking facility design are provided below.

1. Designated Space Location

The following categories of parking spaces must be preferentially located within parking lots and structures in regards to proximity to the main entrance for the primary land use associated with the facility as compared to standard spaces:

- ADA
- Bicycle
- Car-Share
- Carpool/ Vanpool
- Motorcycle/ Scooter
- Compact

2. ADA

All site plans and developments must follow the guidelines for accessibility to places of public accommodation and commercial facilities by individuals with disabilities to the extent required by regulations issued by Federal agencies under the Americans with Disabilities Act (ADA) of 1990.

3. Walkways[33]

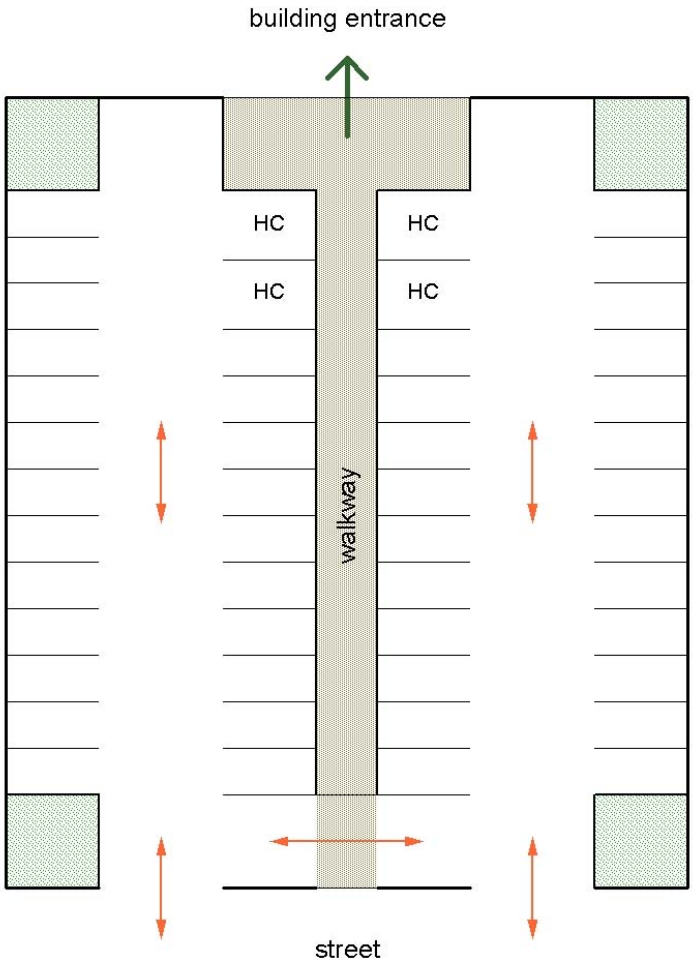
Require the provision of raised pedestrian walkways for facilities with more than 25 spaces. Creating sidewalks through large surface parking lots not only enhances pedestrian safety, but encourage more efficient use of the complete lot by increasing pedestrian comfort and thereby decreasing the "felt" distance of space located furthest from the front door.

Site plans for mixed-use and multi-use developments for which a traffic impact analysis shows a reduction in traffic generation due to internal trip capture (or optionally for any such project receiving a Shared-Parking credit against the minimum parking requirement) shall include a pedestrian circulation schematic. At a minimum the schematic shall provide the following:

> *Walkways within a parking lot shall be provided to minimize the number of driving lanes that one has to cross after parking one's car. Generally a walkway should be provided between every other parking bay. Walkways may be part of landscaped islands that are of sufficient width to include a minimum 5' wide walkway with shade trees, and will not be encroached upon by parked vehicles. (One alternative is to locate the trees in parking bays).*

[33] Determination of sidewalk locations shall be made with the concurrence of staff.

Figure 34 – Example of Required Walkway Provision and Configuration



Expand "Sec. 10-2091: Pedestrian Access and Connectivity" to include the following to its list of uses required to indicate pedestrian access to a public street from the principal building(s) or use as articulated in "Sec. 10-2091: Pedestrian Access and Connectivity" of the current zoning code:

- Facilities specifically developed for housing and/ or services for people with disabilities
- Hospitals and rehabilitation facilities
- Parking Garages
- Senior Centers and service providers
- All municipal facilities

4. Parking Facilities

- Parking structures shall provide wayfinding signs and pavement markings for pedestrian circulation in a quantity and location deemed appropriate for the number of pedestrians on a typical day, and located according to desire lines.
- Pedestrian paths shall be clearly denoted. Pedestrian circulation may be in areas shared with vehicle traffic, but should provide a direct path to facility ingress and egress points — see Figure 35 below. Physical traffic calming devices to control vehicle speed and driver behavior are encouraged.
- Doors to stairwells and elevator lobbies shall not open directly into a vehicular travelway such as drive aisles or parking stalls.
- Elevator waiting areas shall have clear delineation of pedestrians-only zones using at least one of the following: striping, bollards, curbs, or detectable warning strips.
- Lighting levels in the elevator lobby or waiting areas and at entries to stairwells should exceed the lighting levels provided in parking bays to create a visual cue for pedestrians to see lobbies and stairs.
- If elevators are required, the buttons should be labeled with the same floor numbers as the interior level numbering signs used to guide motorists and pedestrians in the parking structure.
- When pedestrian walkways or sidewalks connect separate but adjacent parking structures, the entry areas on both ends of the walkway should provide wayfinding to guide pedestrians. Where such walkways or sidewalks adjoin each parking area, an entry area shall be provided that is unencumbered by parking spaces.

Figure 35: Few Will Use Indirect Marked Paths

Photo: Michael King, Nelson\Nygaard

C. Design Guidelines for Area Plans (PBOD, TODOD)

Careful attention to the design and location of off-street parking can benefit neighborhood quality and the pedestrian environment. The following guidelines are provided for consideration for future development of plans PBOD, TODOD, and other similar districts where accessory parking is regulated by customized transportation and/or parking plans.

Parking garages should not present blank walls to the street. The best solution is to wrap the garage with commercial or residential uses, at a minimum on the ground floor of the garage.

1. Facility Location

At- and above-grade parking is prohibited within 25 feet of a required building line (which in effect forbids surface parking at the street and indirectly requires parking structures be wrapped by liner buildings see Figure 36)

Figure 36: Garage Wrapped in Active Uses

Photo: Payton Chung. Used through Creative Commons Agreement (http://creativecommons.org/licenses/by/2.0/deed.en)

2. Driveways

Sidewalk-driveway interface design should reflect the reality that drivers legally must yield to pedestrians on sidewalks. Varying the paving treatments between the sidewalk and driveway can help delineate these areas more clearly for motorists and pedestrians.

Driveways should ramp up to sidewalk level at the curb; the sidewalk should not ramp down to meet the driveway.

Figure 37: Optimal Sidewalk/ Driveway Interface

Photo: Tom Brown, Nelson\Nygaard

Driveway design should be used to make location of pedestrian traffic clear to drivers and prevent idling in the driveway areas. Signs that warn either driver or pedestrian of the presence of the other are typically indications of poor design. See Figure 38 and Figure 39.

Figure 38: Curb Extension Provides Place for Drivers to Wait Beyond Sidewalk

Photo: Michael King, Nelson\Nygaard

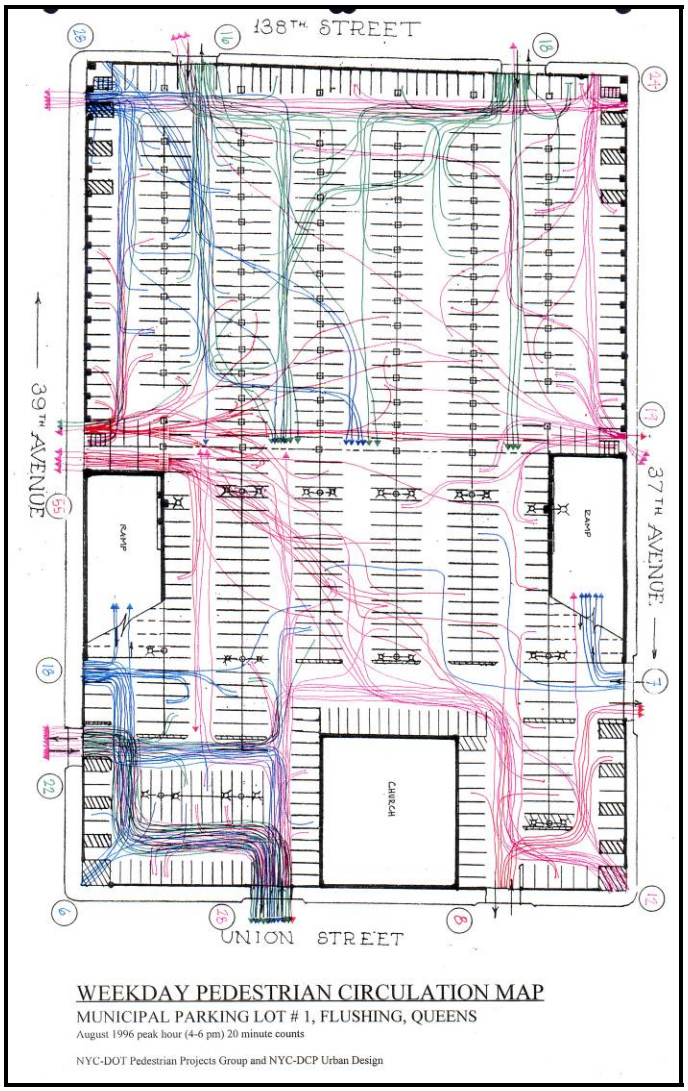
Figure 39: Double Stop Signs Buffer Sidewalk Traffic

Photo: Michael King, Nelson\Nygaard

3. Through Passage

Parking garages and lots should not block pedestrian passageways. In fact, garages and lots can enhance pedestrian mobility by providing mid-block access and allow people to shorten their journey. These routes can be improved by trees, retail, arcades and other features. Marked crosswalks should follow pedestrian desire lines. Traffic calming features (including speed humps, refuge islands, and raised crosswalks) can be included to improve pedestrian safety.

Figure 40: Tracking Surveys Indicate Natural Pedestrian Paths



Graphic: Michael King, Nelson\Nygaard

D. Landscaping

In terms of both coverage and configuration, Asheville's zoning requirements for the landscaping of parking lots contain many elements worth adopting for Raleigh's revised standards. These are summarized below.

1. Coverage

One deciduous tree and four shrubs are required for every 1,500 square feet of vehicular use area (VUA). At least 75 percent of the required deciduous parking lot trees must be large-maturing trees (this is also a requirement in Charlotte). Trees and shrubs must be planted within 15 feet of the vehicular use area to count as parking lot landscaping.

Exposed parking decks are required to plant a minimum of one tree and two shrubs for every 30 linear feet of the parking structure's perimeter. Trees must be planted within 20 feet of the structure. This requirement will be waived wherever other zoning standards require a greater number of plantings.

2. Configuration

When more than four trees are required in a parking lot with interior rows, 50 percent of the trees and shrubs must be planted in islands or medians located within the parking lot.

When more than four bays of parking are proposed, an interior island with an average width of 20 feet and a length equivalent to the length of the average parking bay is required. This island must be planted and include a pedestrian walkway no less than five feet wide and placed in a location that enhances pedestrian circulation, preferably leading directly to a building entrance or sidewalk. The minimum island size is 200 square feet of pervious planting surface per tree. Islands must maintain an average width of ten feet with a minimum width no less than five feet.

All continuous runs of 15 or more parking spaces must be interrupted by a tree island.

Each parking space must be located within 60 feet of a tree as measured from the trunk of the tree to the closest point of the parking space (this is also a requirement in Charlotte).

E. Other Considerations

1. On-Street Management in lieu of Minimum Parking Requirements

In spillover-sensitive areas, the implementation of, or improvements to, on-street management strategies such as pricing (meters) and permitting (Residential Parking Permit programs) should be explored. The more effective these strategies are in preserving on-street parking opportunities for appropriate populations (typically residents or commercial customers depending on the location), the less these populations will be inclined to pressure the City for higher off-street parking requirements. Appendix D provides a more detailed exploration of the relationship between off-street parking standards and on-street space management.

2. Allow Transportation Fund Fee Payment for Excess Parking

Provide the option of In Lieu Fee style payment for each space built in addition to the maximum allowed. Use of such fees to fund strategic investments in alternate modes such as transit can offset the increased traffic impact of projects that build parking above the maximum desired.

Example — Arlington County's "Columbia Pike Form-Based Code":

"Parking above the maximum may be provided upon payment to the County. The County Manager shall establish the amount of payment annually based on the approximate cost to build structured parking."[34]

3. Unbundling

The bundling of accessory parking with housing increases the cost of housing while decreasing the cost of car ownership and driving by "shifting car cost to housing."[35] A similar result is true when designated or reserved parking spaces are included in the lease of commercial or office space.

Instead, require that all parking accessory to development that provides more than the maximum space standard be "unbundled" — provided as a cost item distinct from the lease or sale of tenant space within the development.

Example — San Francisco:
"(a) In DTR, C-3, RTO, and NCT Districts, all off-street parking spaces accessory to residential uses in new structures of 10 dwelling units or more, or in new conversions of non-residential buildings to residential use of 10 dwelling units or more, shall be leased or sold separately from the rental or purchase fees for dwelling units for the life of the dwelling units, such that potential renters or buyers have the option of renting or buying a residential unit at a price lower than would be the case if there were a single price for both the residential unit and the parking space. In cases where there are fewer parking spaces than dwelling units, the parking spaces shall be offered first to the potential owners or renters of three-bedroom or more units, second to the owners or renters of two bedroom units, and then to the owners or renters of other units. Renters or buyers of on-site inclusionary affordable units provided pursuant to Section 315 shall have an equal opportunity to rent or buy a parking space on the same terms and conditions as offered to renters or buyers of other dwelling units, and at a price determined by the Mayor's Office of Housing, subject to procedures adopted by the Planning Commission notwithstanding any other provision of Section 315 et seq.

(b) Exception. The Planning Commission may grant an exception from this requirement for projects which include financing for affordable housing that requires that costs for parking and housing be bundled together."[36]

[34] "Columbia Pike Special Revitalization District – Form Based Code", Arlington County Regulating Plan, 2005.

[35] "Suburbanizing the City: How New York City Parking Requirements Lead to More Driving", Rachel Weinberger, Mark Seaman, Carolyn Johnson, 2008.

[36] "City and County of San Francisco Municipal Code: Planning Code", 2008.

Appendix A:
Examples of Facility & Location Standards for Bicycle Parking

Charlotte, North Carolina
Portland, Oregon

Section 12.202A. Bicycle parking standards.
(Petition No. 2005-013, § 12.202A, 3/21/05)

(1) Short-term bicycle parking shall meet the following standards:

(a) Covered spaces. If twenty (20) or more short-term bicycle spaces are required, then at least fifty (50) percent of the required short-term bicycle spaces shall be covered. Coverage may be provided under roof overhangs or awnings, in bicycle lockers or within or under other structures.

(b) Location. Short-term bicycle parking should be located along a major building approach line and clearly visible from the approach. The rack area should be no more than a 30-second walk (120 feet) from the entrance it serves and should preferably be within 50 feet. A rack area should be as close or closer than the nearest nonhandicap car parking space. A rack area should be clearly visible from the entrance it serves. A rack area should be provided near each actively used entrance. In general, multiple buildings should not be served with a combined, distant rack area. It is preferred to place smaller rack areas in locations that are more convenient.

(c) The requirements of Section 12.202A(3) shall be met.

(d) Lighting. Lighting in the bicycle parking area shall meet the IESNA recommended maintained minimum horizontal and vertical illumination values and the recommended maximum to minimum uniformity ratios.

(e) Design. Bicycle parking areas shall meet the design specifications in the Charlotte-Mecklenburg Land Development Standards Manual Chapter. Other designs and manufacturers may be deemed acceptable by the Plans Review staff.

(2) Long-term bicycle parking shall meet the following standards:

(a) Covered spaces. All spaces shall be fully covered from inclement weather.

(b) Location. Long-term bicycle parking shall be located no more than 500 feet from a primary entrance of the use they are intended to serve. Long-term bicycle parking may consist of indoor parking, racks in covered loading dock areas, racks in garage structures, bicycle lockers or other means which provide coverage to the bicycle. Such parking may be restricted to use only by employees, tenants, residents or others at the discretion of the property owner or management.

(c) Lighting. Lighting in the bicycle room, compound or locker area shall meet the IESNA recommended maintained minimum horizontal and vertical illumination values and the recommended maximum to minimum uniformity ratios.

(d) Design. Bicycle parking areas shall meet the design specifications in the Charlotte-Mecklenburg Land Development Standards Manual. Other designs and manufacturers may be deemed acceptable by the Plans Review staff.

(e) The standards of Section 12.202A(3) shall be met.

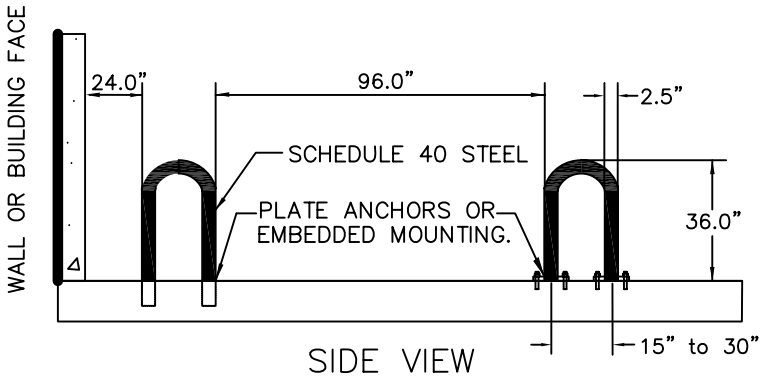
(3) General standards for all bicycle parking areas:

(a) Secured. Bike lockers and racks shall be securely anchored to the ground and on a hard surface.

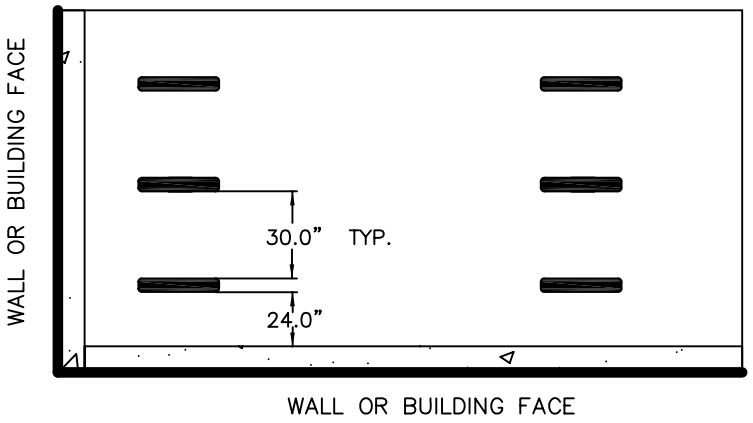
(b) Maneuvering areas. Each required bicycle parking space shall be accessible without moving another bicycle. An aisle at least five (5) feet wide is required between the building wall and the bicycle parking rack to allow room for bicycle maneuvering, unless specified otherwise in the Charlotte-Mecklenburg Land Development Standards Manual. Bicycle parking spaces should provide a clearance of at least four (4) feet on adjacent sidewalks. Bicycle lockers should be situated so there are no obstructions within 5 feet of the entry door(s) of the locker.

(c) Signs. If required bicycle parking is not clearly visible from the entrance to the building, parking structure, transit station, or lot, a sign shall be posted at the primary entrances indicating the location of the parking.

(d) Use. Required bicycle parking spaces shall be available for residents, visitors, customers and/or employees of the use.



SIDE VIEW



PLAN VIEW

NOTES:

1. BIKE RACKS SHOULD BE INSTALLED AS PER MANUFACTURER'S RECOMMENDED INSTALLATION PROCEDURES.
2. ALTERNATIVE BIKE RACKS OR LOCKERS MAY BE USED BUT ARE SUBJECT TO APPROVAL BY THE CHARLOTTE DEPARTMENT OF TRANSPORTATION.
3. ALL DIMENSIONS SHOWN ARE MINIMUM.

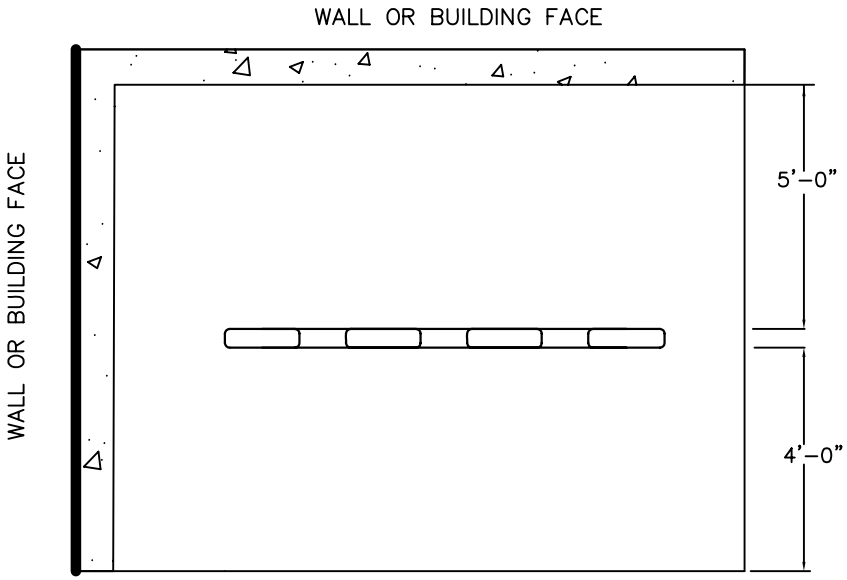
NOT TO SCALE

CHARLOTTE.

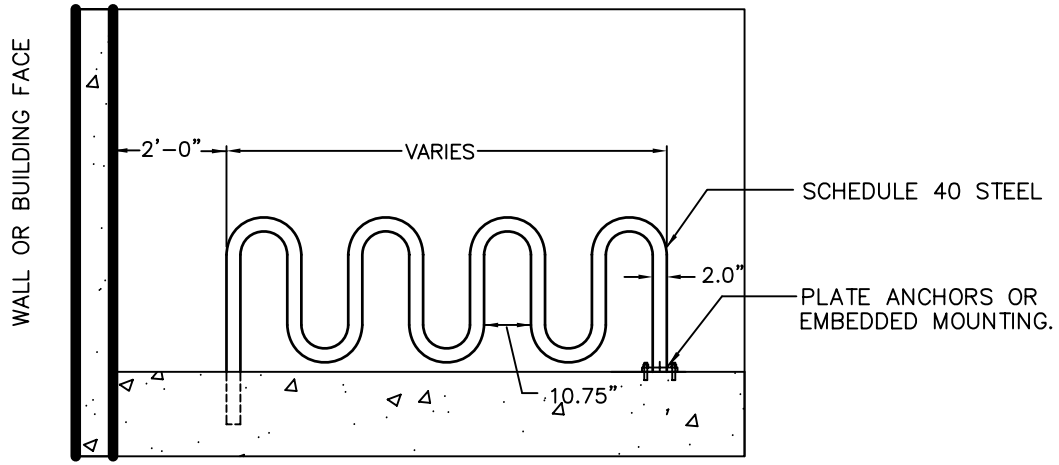
CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

INVERTED "U" RACK FOR BICYCLE PARKING

STD. NO.	REV.
50.20	



PLAN VIEW



SIDE VIEW

NOTES:

1. BIKE RACKS SHOULD BE INSTALLED AS PER MANUFACTURER'S RECOMMENDED INSTALLATION PROCEDURES.
2. ALTERNATIVE BIKE RACKS OR LOCKERS MAY BE USED BUT ARE SUBJECT TO APPROVAL BY THE CHARLOTTE DEPARTMENT OF TRANSPORTATION.
3. ALL DIMENSIONS SHOWN ARE MINIMUM.

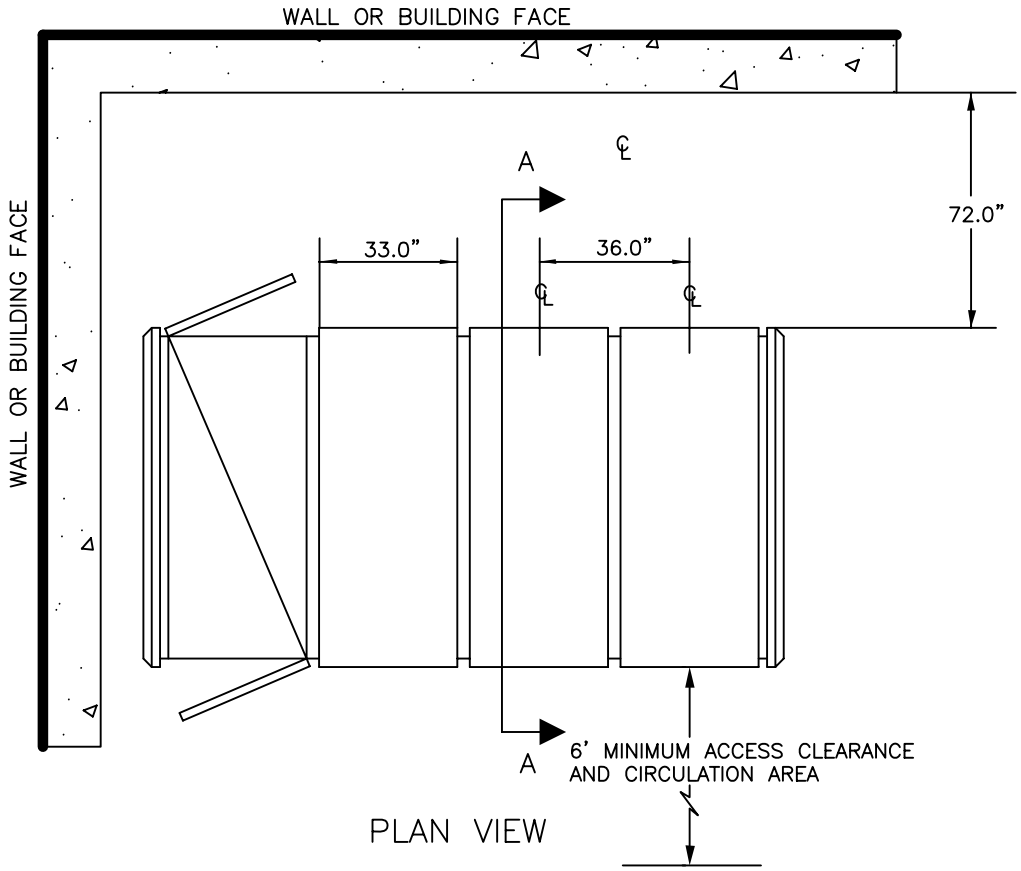
NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

WAVE RACK FOR BICYCLE PARKING

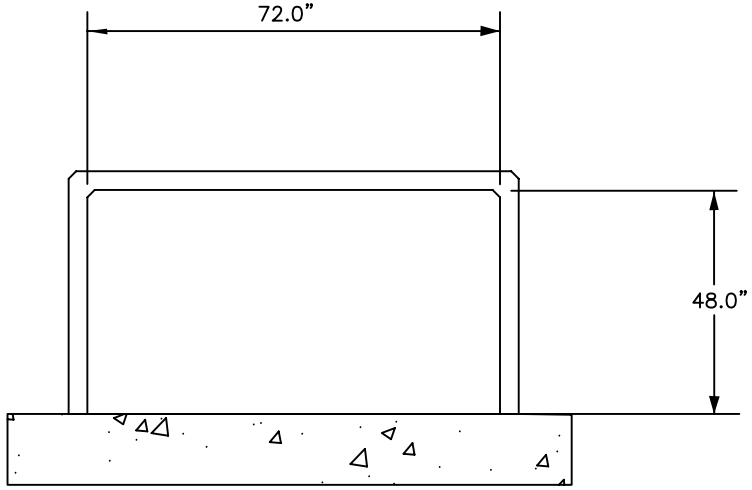
STD. NO.	REV.
50.21	



PLAN VIEW

NOTES:

1. BIKE LOCKERS SHOULD BE INSTALLED AS PER MANUFACTURER'S RECOMMENDED INSTALLATION PROCEDURES.
2. ALTERNATIVE BIKE RACKS OR LOCKERS MAY BE USED BUT ARE SUBJECT TO APPROVAL BY THE CHARLOTTE DEPARTMENT OF TRANSPORTATION.
3. ALL DIMENSIONS SHOWN ARE MINIMUM.
4. ALLOW FOR POSITIVE DRAINAGE AWAY FROM LOCKERS.



SECTION A–A

NOT TO SCALE

CHARLOTTE.

CITY OF CHARLOTTE
LAND DEVELOPMENT STANDARDS
INCLUDES CHARLOTTE ETJ

BICYCLE LOCKERS

STD. NO.	REV.
50.22	

33.266.210 Required Bicycle Parking

A. Number of spaces required.

1. The required minimum number of bicycle parking spaces for each use category is shown on Table 266-6. No bicycle parking is required for uses not listed.

2. The required minimum number of bicycle parking spaces is based on the primary uses on a site. There are no bicycle parking requirements for accessory uses. However, if the required number of spaces for the primary uses is based on net building area, the net building area of accessory uses is included with the primary uses in the calculation. For example, a Manufacturing and Production use of 45,000 square feet with 15,000 square feet of accessory Office use would have a bicycle parking requirement of 4 spaces, based on 60,000 square feet of net building area. If the primary use is not listed in Table 266-6, no bicycle parking is required for the accessory use.

3. When there are two or more separate primary uses on a site, the required bicycle parking for the site is the sum of the required parking for the individual primary uses.

B. Exemptions.

1. No long-term bicycle parking is required on a site where there is less than 2,500 square feet of gross building area.

2. No bicycle parking is required for a Commercial Parking facility on a surface parking lot in the Central City plan district.

33.266.220 Bicycle Parking Standards

A. Short-term bicycle parking.

1. Purpose. Short-term bicycle parking encourages shoppers, customers, messengers, and other visitors to use bicycles by providing a convenient and readily accessible place to park bicycles. Short-term bicycle parking should serve the main entrance of a building and should be visible to pedestrians and bicyclists.

2. Standards. Required short-term bicycle parking must meet the following standards:

   a. Short-term bicycle parking must be provided in lockers or racks that meet the standards of Subsection 33.266.220.C.

   b. Location. Short-term bicycle parking must be:

      (1) Outside a building;

      (2) At the same grade as the sidewalk or at a location that can be reached by an accessible route; and

      (3) Within the following distances of the main entrance:

         - Building with one main entrance. For a building with one main entrance, the bicycle parking must be within 50 feet of the main

entrance to the building as measured along the most direct pedestrian access route. See Figure 266-8;

- Building with more than one main entrance. For a building with more than one main entrance, the bicycle parking must be along all façades with a main entrance, and within 50 feet of at least one main entrance on each façade that has a main entrance, as measured along the most direct pedestrian access route. See Figure 266-9;

- Sites with more than one primary building. For sites that have more than one primary building, but are not an institutional campus, the bicycle parking must be within 50 feet of a main entrance as measured along the most direct pedestrian access route, and must be distributed to serve all primary buildings. See Figure 266-10;

- Institutional Campus. On an institutional campus with more than one building or main entrance, the bicycle parking must be either:

  - Within 50 feet of a main entrance as measured along the most direct pedestrian access route; or

  - If the short-term bicycle parking is more than 50 feet from a main entrance, it must be in a common bicycle parking location along a pedestrian access route.

c. Standards for short-term bicycle parking. Each required short-term bicycle parking space must be at least 2 feet by 6 feet. See figure 266-11.

d. Bicycle Parking Fund.

(1) This option may be used only if it is not possible to provide all of the required short-term bicycle parking on site in a way that complies with all of the standards in A.2.b. This option may not be used if:

- There are surface parking areas, plazas, exterior courtyards, or other open areas on the site, other than required landscaping;

- Those open areas are large enough, separately or in combination, to accommodate all required short-term bicycle parking; and

- The open areas meet the locational requirements of A.2.b.

(2) Fund use and administration. The Bicycle Parking Fund is collected and administered by the Office of Transportation. The funds collected will be used to install bicycle parking and associated improvements in the right-of-way.

(3) This option may not be used if any required short-term bicycle parking is provided on site.

Appendix B:
ULI Shared Parking Model — User Manual

BRIEF USER MANUAL FOR THE SHARED PARKING MODEL

INTRODUCTION

This document provides instructions for how to use the Shared Parking Model, a spreadsheet that estimates the shared parking demand in mixed-use projects. Data input and the resulting outputs will be explained.

Detailed explanations of the various land use categories and a description of the input variables such as "mode adjustment" and "noncaptive ratio" are provided by the 2005 book *Shared Parking*, Second Edition, published by the Urban Land Institute (ULI) and the International Council of Shopping Centers (ICSC).

This model is intended to be a tool to accompany that book, and the user should be familiar with the definitions and the methodology explained there.

MODEL STRUCTURE OVERVIEW

The model consists of a number of individual worksheets linked so that the calculations are done automatically, and some formatting assistance is provided by several macros. The basic structure of the model corresponds to the worksheets provided in the spreadsheet:

Input—where data are entered for a given mixed-use project or project scenario.

Base Data—the ULI default values for parking ratios and for seasonal, hourly, and weekday/weekend data.

Monthly Sheets (hidden)—13 worksheets that contain detailed calculations for each month of the year and for Late December.

Peak Month—a reproduction of data from the monthly worksheet with the highest parking demand.

Summary—a condensed summary of both the project input data and the estimated weekday and weekend peak-hour parking demand for the peak month of the year.

Weekday—a chart illustrating the estimated peak weekday demand for each month, plus Late December.

Weekend—a chart illustrating the estimated peak weekend demand for each month, plus Late December.

By Hour—a chart illustrating the estimated parking demand throughout the day for the peak month of the year; data for both weekday and weekend are shown in graph form.

Weekday Comparison—a chart illustrating the estimated parking demand throughout the day on a weekday for each month of the year, plus Late December.

Weekend Comparison—a chart illustrating the estimated parking demand throughout the day on a weekend for each month of the year, plus Late December.

USER MANUAL

INPUT

The Input sheet contains several fields for entering data specific to your project.

In cells A3 and A4, the title of your project and a description of the scenario being tested can be entered. This same information will appear on the Peak Month and Summary pages.

In Cell B9, enter the projected parking supply for your project. This number is used in the graphs on the Weekday, Weekend, and By Hour worksheets as a visual cue to relate the estimated parking demand to the projected supply.

The remainder of Column B is dedicated to data for those land uses related to your project. For example, if your facility contains 90,000 square feet of gross leasable area (sf GLA) for a data processing center, you would enter "90000" in cell B60.

Note that several land uses—cineplex, theater, arena, stadium, hotel, and residential—do not compute parking demand based on the square footage of the facility. The appropriate units for these uses are given in Column C. Column C should not be changed by the user. For residential housing, you may select the number of reserved residential spaces per unit in cells B47 and B50. The default value is set at 1.0 space per unit.

While the Input sheet contains a listing of all the land uses in the spreadsheet model, in order to simplify the data output, the output sheets (Peak Month and Summary) will only show data for those land uses that are actually included in your project.

Columns D and E show the maximum parking demand for each facility—in effect, the base parking demand for that particular land use when the impact of shared parking is not taken into account. This maximum demand also does not account for the mode adjustments and noncaptive ratios (detailed below). The figures in these two columns are generated by the spreadsheet and should not be changed manually by the user. The totals at the bottom of columns D and E show what the parking requirements would be for your project if shared parking, mode adjustments, and noncaptive ratios were not considered. The totals also provide a sum of the amount of visitor/guest parking, as well as employee parking. If your project includes residential spaces that are reserved for specific residents, the number of these spaces will also be totaled at the bottom of columns D and E.

Columns F, G, H, and I allow you to modify the mode adjustments for your project. The mode adjustment is the percentage of visitors to your project who drive to the site rather than use an alternative means of transportation, such as riding mass transit, riding a bicycle, or walking. In contrast with previous versions of the Shared Parking Model, the mode adjustment data are input as the percentage of people who drive to the project. For example, a split of 20 percent transit use is entered in columns F through I as "80" to represent 80 percent of the project visitors using an automobile to reach the project. Columns F through I allow the user to enter different mode adjustments for daytime and evening periods for both weekdays and weekends. Likewise, the model allows different mode adjustments for visitors and employees.

Columns J, K, L, and M allow you to modify the noncaptive ratios for your project. The noncaptive ratio is the percentage of visitors to a component of your project who are new customers to the overall project. Again, the data are entered as the total percentage of noncaptive persons, so if 25 percent of the people visiting a restaurant on your site during the Saturday lunch period are coming from other uses within the project, enter "75" in Column L.

BASE DATA

The Base Data worksheet contains the recommended parking ratios and the monthly and hourly factors as recommended by the ULI shared parking study team. Each of the three types of data is grouped separately and ordered by land use. The base data can be modified to suit your project and/or locale.

If any of the base data are modified, a note will appear on the Peak Month output page reading, "ULI base data have been modified from default values." Column AA of the Peak Month sheet identifies through a footnote whether the base ratios have been modified. You may include a reference on the Peak Month sheet for each footnote, beginning at cell A72 for weekday demand and cell A139 for weekend demand.

MONTHLY

The 13 Monthly Sheets summarize the detailed calculations for each month of the year and for Late December. These sheets are usually hidden, but can be displayed and rehidden using the buttons at the bottom of the Peak Month worksheet should you wish to examine the data for each month.

PEAK MONTH

The Peak Month worksheet is an output page that identifies the peak month of the year in terms of parking demand for your project. It shows the hourly pattern of estimated weekend and weekday parking demand in columns B through V, and summarizes the peak hours of parking activity for morning, afternoon, evening, and overall in columns W through Z.

This page should not be changed manually by the user because it portrays results based on data and worksheet calculations.

SUMMARY

The Summary sheet is an output page that identifies the peak month, and the periods of peak weekday and weekend demand. It also summarizes the parking rates used in the analysis and the adjustments made to the parking rates by the mode adjustments and noncaptive ratios.

As with the Peak Month worksheet, the Summary sheet should not be changed manually.

GRAPHS

The final five worksheets are graphs titled Weekday, Weekend, By Hour, Weekday Comparison, and Weekend Comparison. These sheets are simply graphic representations of the data supplied in the preceding worksheets and provide no unique calculations.

A dark horizontal line appears on the Weekday, Weekend, and By Hour graphs representing the number of parking spaces included in the project so that the reader can easily see the relationship between the proposed parking supply—as entered on the Input worksheet—and the parking demand projected by the Shared Parking Model.

The Weekday and Weekend sheets show the peak parking demand for the busiest hour of a weekday and weekend, respectively. The peak parking demand is shown for all 12 months and for Late December.

The By Hour worksheet shows the weekday and weekend parking demand each hour of the day for the peak month of the year.

The Weekday Comparison worksheet shows the weekday parking demand each hour of the day for each month of the year, plus Late December.

The Weekend Comparison worksheet shows the weekend parking demand each hour of the day for each month of the year, plus Late December.

ADDING LAND USES

Adding land uses is not a recommended operation, but direction is provided here for the user's convenience.

1. On the Input worksheet, identify a land use you will not be using in the model (excluding Shopping Center or Office uses). Select a land use that employs the same unit of measure as the use you are adding—square feet of gross leasable area, for instance.

2. Replace the land use name in Column A with the new land use. This will replace the name in all other sheets throughout the model.

3. On the Base Data worksheet, update the inputs for the new land use in the following tables:

- Recommended Parking Ratios
- Monthly Adjustments for Customer/Visitor Parking
- Monthly Adjustments for Employee/Resident Parking
- Time-of-Day Factors for Weekday Demand
- Time-of-Day Factors for Weekend Demand

COMPATIBILITY

This spreadsheet has been tested with several software packages in order to determine those software platforms with which it can be used. Compatibility is listed in three separate ranges because various platforms proved to have varying ranges of compatibility. Only those software platforms described below were tested.

Full Compatibility

All versions of Microsoft Excel after Excel 97 were found to be fully compatible. The versions of Excel that shipped with MS Office XP and MS Office 2003 inexplicably increased file size, but no incompatibilities were found.

Moderate Compatibility

Microsoft Excel 2004 for Macintosh OSX and Gnumeric on both the Windows and Linux platforms were found to be moderately compatible with this spreadsheet. All functions used in the spreadsheet were recognized on these platforms, but macros did not function properly. If you use this software, you will need to unhide rows on the Summary and Peak Month worksheets manually because this functionality is lost.

Limited Compatibility

All recent versions of Openoffice.org Calc that include the recent betas of Openoffice.org 2.0 on both the Windows and Linux platforms were found to have limited compatibility. Calc does not understand the MS Excel function "Indirect," and therefore is unable to compute the peak month in the manner used in the Peak Month worksheet. Calc also does not properly display the graph in the By Hour worksheet, because this graph is dependent on results supplied in the Peak Month worksheet. It is still possible to use the spreadsheet with Calc, but you will have to unhide all of the monthly sheets and manually inspect the projected parking demand to find the peak value.

Appendix C:
Model Shared-Parking Agreement

As accessed on October 9, 2008 from:
http://transtoolkit.mapc.org/Parking/Strategies/shared_parking.htm

Appendix B: Model - Shared Use Agreement for Parking Facilities
Effective:_____

This Shared Use Agreement for Parking Facilities, entered into this ____ day of _____ , _____, between _____, hereinafter called lessor and _____, hereinafter called lessee.

In consideration of the covenants herein, lessor agrees to share with lessee certain parking facilities, as is situated in the City of _____, County of _____ and State of _____, hereinafter called the facilities, described as:

> [Include legal description of location and spaces to be shared here, and as shown on attachment 1.]

The facilities shall be shared commencing with the ____ day of _____, _____, and ending at 11:59 PM on the ____ day of _____, _____, for [insert negotiated compensation figures, as appropriate]. [The lessee agrees to pay at [insert payment address] to lessor by the _____ day of each month [or other payment arrangements].]

Lessor hereby represents that it holds legal title to the facilities

The parties agree:

1. USE OF FACILITIES

   This section should describe the nature of the shared use (exclusive, joint sections, time(s) and day(s) of week of usage.

   -SAMPLE CLAUSE-
   [Lessee shall have exclusive use of the facilities. The use shall only be between the hours of 5:30 PM Friday through 5:30 AM Monday and between the hours of 5:30 PM and 5:30 AM Monday through Thursday.]

2. MAINTENANCE

   This section should describe responsibility for aspects of maintenance of the facilities. This could include cleaning, striping, seal coating, asphalt repair and more.

   -SAMPLE CLAUSE-
   [Lessor shall provide, as reasonably necessary asphalt repair work. Lessee and Lessor agree to share striping, seal coating and lot sweeping at a 50%/50% split based upon mutually accepted maintenance contracts with outside vendors. Lessor shall maintain lot and landscaping at or above the current condition, at no additional cost to the lessee.]

3. UTILITIES and TAXES

This section should describe responsibility for utilities and taxes. This could include electrical, water, sewage, and more.

-SAMPLE CLAUSE-
[Lessor shall pay all taxes and utilities associated with the facilities, including maintenance of existing facility lighting as directed by standard safety practices.]

4. SIGNAGE

This section should describe signage allowances and restrictions.

-SAMPLE CLAUSE-
[Lessee may provide signage, meeting with the written approval of lessor, designating usage allowances.]

5. ENFORCEMENT

This section should describe any facility usage enforcement methods.

-SAMPLE CLAUSE-
[Lessee may provide a surveillance officer(s) for parking safety and usage only for the period of its exclusive use. Lessee and lessor reserve the right to tow, at owners expense, vehicles improperly parked or abandoned. All towing shall be with the approval of the lessor.]

6. COOPERATION

This section should describe communication relationship.

-SAMPLE CLAUSE-
[Lessor and lessee agree to cooperate to the best of their abilities to mutually use the facilities without disrupting the other party. The parties agree to meet on occasion to work out any problems that may arise to the shared use.]

7. INSURANCE

This section should describe insurance requirements for the facilities.

-SAMPLE CLAUSE-
[At their own expense, lessor and lessee agree to maintain liability insurance for the facilities as is standard for their own business usage.]

8. INDEMNIFICATION

This section should describe indemnification as applicable and negotiated. This is a very technical section and legal counsel should be consulted for appropriate language to each and every agreement.

-NO SAMPLE CLAUSE PROVIDED-

9. TERMINATION

This section should describe how to or if this agreement can be terminated and post termination responsibilities.

-SAMPLE CLAUSE-
[If lessor transfers ownership, or if part of all of the facilities are condemned, or access to the facilities is changed or limited, lessee may, in its sole discretion terminate this agreement without further liability by giving Lessor not less than 60 days prior written notice.

Upon termination of this agreement, Lessee agrees to remove all signage and repair damage due to excessive use or abuse. Lessor agrees to give lessee the right of first refusal on subsequent renewal of this agreement.]

10. SUPPLEMENTAL COVENANTS

This section should contain any additional covenants, rights, responsibilities and/or agreements.

-NO SAMPLE CLAUSE PROVIDED-

IN WITNESS WHEREOF, the parties have executed this Agreement as of the Effective Date Set forth at the outset hereof.

[Signature and notarization as appropriate to a legal document and as appropriate to recording process negotiated between parties.]

Appendix D:
On-Street Management vs. Off-Street Requirements — the right tool for balancing smart growth zoning and spillover parking mitigation

THE DECLINE & FALL OF MINIMUM PARKING REQUIREMENTS
BY PATRICK SIEGMAN, NELSON\NYGAARD CONSULTING ASSOCIATES, INC.

CNU XV, PHILADELPHIA, MAY 18, 2007

Reconsidering Parking Policy

When did cities first adopt minimum parking requirements, and why? In 1923, Columbus, Ohio adopted the first off-street parking requirement, requiring one parking space for each apartment in new apartment buildings. In 1939, Fresno, CA, became the first city to adopt minimum parking requirements for any use besides housing, adopting them for hotels and hospitals.

Why were they adopted? The city of Pasadena's zoning code declares that the purpose of minimum parking requirements is to "alleviate or prevent traffic congestion and shortages of curbside parking spaces". Has it worked? For half a century, virtually every city in southern California has had minimum parking requirements, and yet not only has traffic congestion gotten worse, it is projected to steadily worsen over the next 20 years. The city of San Diego's zoning code declares that minimum parking requirements are intended to "reduce traffic congestion and improve air quality". So, perhaps the cure for Los Angeles's air pollution is more parking lots?

Why was it believed that setting minimum parking requirements would alleviate traffic congestion? By the 1920s, the new problem of "spill-over parking" had already arrived in many downtowns. Automobiles filled up all of the curb parking in front of shops and apartments, and any nearby private parking, and then sometimes spilled over into nearby neighborhoods, crowding the streets there. In search of free parking near their destination, motorists often took to circling about, waiting for a space to open up, and many motorists simply double-parked.

The essential concept of minimum parking requirements was that if each destination provided ample parking, with enough spaces available so that *even when parking was free* there would be plenty of room, then there would be plenty of spaces at the curb. Motorists would no longer need to circle the block looking for a space, and so traffic congestion would be lessened. Traffic engineers also pointed out that if enough off-street parking were built to meet all possible demand, it would be much easier to prohibit on-street parking and fill the streets from sidewalk to sidewalk with moving traffic.

Minimum parking requirements, however, had unintended consequences for traffic. Cities routinely set minimum parking requirements that were simply high enough to satisfy the demand for parking even when parking was given away for free. The predictable result was that most destinations wound up with free parking. Dozens of studies have now demonstrated that when parking is given away free of charge, people drive more – a lot more.

So how to recover from this situation? Here's a seven step process, a stripped-down version of the actual plans that we've implemented in numerous places over the last 15 years or so.

Seven Recommendations – A 7-Step Recovery Program

Step 1: Charge the right price for curb parking

Charge the lowest price that will leave one or two vacant spaces on each block -- that is, performance-based pricing. This will eliminate the traffic congestion caused by drivers cruising for parking.

One should adopt the Goldilocks principle of parking pricing: if rates are set too high, so that too many spaces are empty, then the rates should be adjusted downward until the parking is again well-used by customers. If no spaces are available, then curb parking prices should be raised until you have about one or two vacant spaces on each block. For example, in Redwood City, California, the city's policy goal is to keep occupancy rates for curb parking at about 85%, or about one out of every eight spaces available, and staff is authorized by City Council to adjust parking rates to meet this goal. Parts of Seattle now follow the same policy.

Making sure that there are curb parking spaces available, using parking prices rather than relying on minimum off-street parking requirements, is also a fundamental first step that makes possible the implementation of many of the powerful traffic reduction strategies described later.

Step 2: Return the meter revenue to the neighborhoods that generate it

Revenue return will make performance-based prices for curb parking politically popular.

A. Create Commercial Parking Benefit Districts, modeled after the Old Pasadena Parking Meter Zone.

Net revenues from paid parking at the curb should fund public improvements that benefit the blocks where the money is collected.

If parking revenues seem to disappear into a city's General Fund, so that the money seems to produce no direct benefit for the neighborhood where it is collected, there will usually be little support for installing parking meters, or for raising rates when needed to keep curb parking spaces available. But when a business district's merchants and property owners can clearly see that the cash collected is being spent for the benefit of their blocks, on projects that they have chosen, they become willing to support market rate pricing. So, in Redwood City, and places like Old Pasadena, California, and Ventura, the city's policy is that all revenues collected from curb parking is spent for public improvements in the blocks where it is collected.

B. Establish Residential Parking Benefit Districts.

In residential areas, Residential Parking Benefit Districts can be implemented, especially where there is the potential for spillover parking from nearby commercial areas, or other major destinations, such as hospitals and universities. Residential Parking Benefit Districts are similar to typical residential parking permit districts, but they can also allow a limited number of commuters to pay to use surplus on-street parking spaces in the residential areas. They then return the resulting revenues to the neighborhood to fund public improvements. So, in cities like Austin, Texas, Boulder Colorado, Santa Cruz and West Hollywood in California, commuters pay to park in residential areas, and all the revenue collected is then used to support public benefits for those neighborhoods.

Step 3: Remove all minimum parking requirements for off-street parking

Once the first two steps described above are fully implemented, off-street minimum parking requirements are no longer needed to prevent shortages of on-street parking. That is, once a city is setting prices for curb parking that ensure at least one or two vacancies per block, and returning the resulting parking revenue to the neighborhood where it is generated, minimum parking requirements no longer serve any purpose. Instead, they only act to worsen traffic, and to discourage developers, employers, residents and other property owners from implementing strategies that reduce traffic and parking demand.

Once we have solved the problem of on-street parking shortages using intelligent management, and removed parking requirements, a few more steps are extremely helpful to restore sanity and balance to our cities. The primary purpose of these next few steps is to turn parking into more of a normal commodity, so that parking is bought and sold, rented and leased, like most other goods and services.

Next steps: Require the unbundling of parking costs

Parking costs are typically bundled into the sale or rental price of housing and commercial space in California, for the sake of simplicity and because that is the conventional practice in real estate. But although the cost of parking is often hidden in this way, parking is never free, and hiding its cost results in higher vehicle ownership and more traffic.

Step 4: "Unbundle" the full cost of parking from the cost of leasing commercial space.

For example, Bellevue, WA, “requires building owners to include parking costs as a separate line item in leases and to charge a minimum rate for monthly long-term parking that is equal or greater than twice the cost of a bus pass. This policy means that employers who successfully reduce parking demand and traffic to their worksites are able to reap financial benefits by leasing fewer parking spaces.

Step 5: On the residential side, "unbundle" the cost of parking from the cost of rental apartments and condominiums.

Then, people can choose how many parking spaces that they actually wish to lease. For example, San Francisco requires "unbundling" parking costs in all residential structures with over ten dwelling units. The result is lower household vehicle ownership, and greater success for businesses such as Carsharing operations.

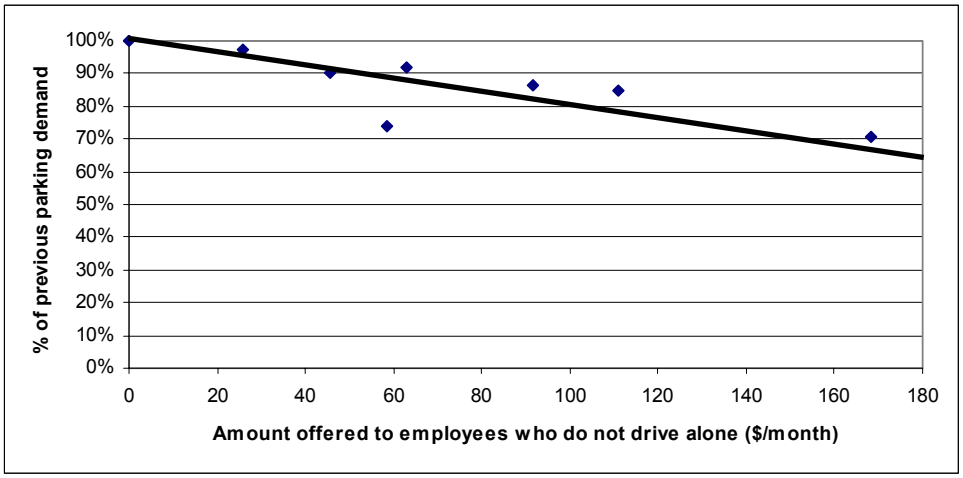
Step 6: Require Parking Cash-Out

Require all new and existing employers that provide subsidized employee parking to offer their employees the option to "cash out" their parking subsidy.

The majority of all employers provide free or reduced price parking for their employees as a fringe benefit. When parking cash-out is required, employers are allowed to continue this practice *on the condition that they offer the cash value of the parking subsidy to any employee who does not drive to work*. For example, Santa Monica, California enforces this policy.

The primary benefit of parking cash out programs is their proven effect on reducing auto congestion and parking demand. For example, at case studies in Los Angeles, offering $165 a month cash to employees who don't drive resulted in about a 30% decrease in parking demand and drive alone rates. Note that in many parking cash-out examples, the employers are located in areas that have no transit. A large part of the reduced driving to work that occurred with these parking cash out programs resulted from carpooling.

Figure -1 Effects of Parking Cash-Out on Parking Demand



Effects of parking cash-out on parking demand. Source: Derived from Donald Shoup, "Evaluating the Effects of Parking Cash-Out: Eight Case Studies," 1997. Based on the cost in 2005 dollars.

Step 7: Where necessary to attract retail tenants, provide free or cheap short-term parking for shoppers.

Whether the need is real or perceived, in many places, retailers will not sign a lease unless their customers will receive free parking. Through methods such as free parking for up to 90 minutes, or validated parking, this can be accommodated. However, providing free shopper parking doesn't require instituting minimum parking requirements, or hiding the cost of parking from residents and employees. The technique is to provide subsidized parking only as necessary to attract retailers, given the realities of the current marketplace.

Put these seven steps together, and American cities and towns can reap enormous benefits in reducing traffic, increasing transit use, making housing more affordable, and perhaps most importantly, making it possible to actually build beautiful, walkable cities and towns again.